

JUL 30 1917
UNIV. OF MICH.
LIBRARY

Railway Age Gazette

SECOND HALF OF 1917—No. 4

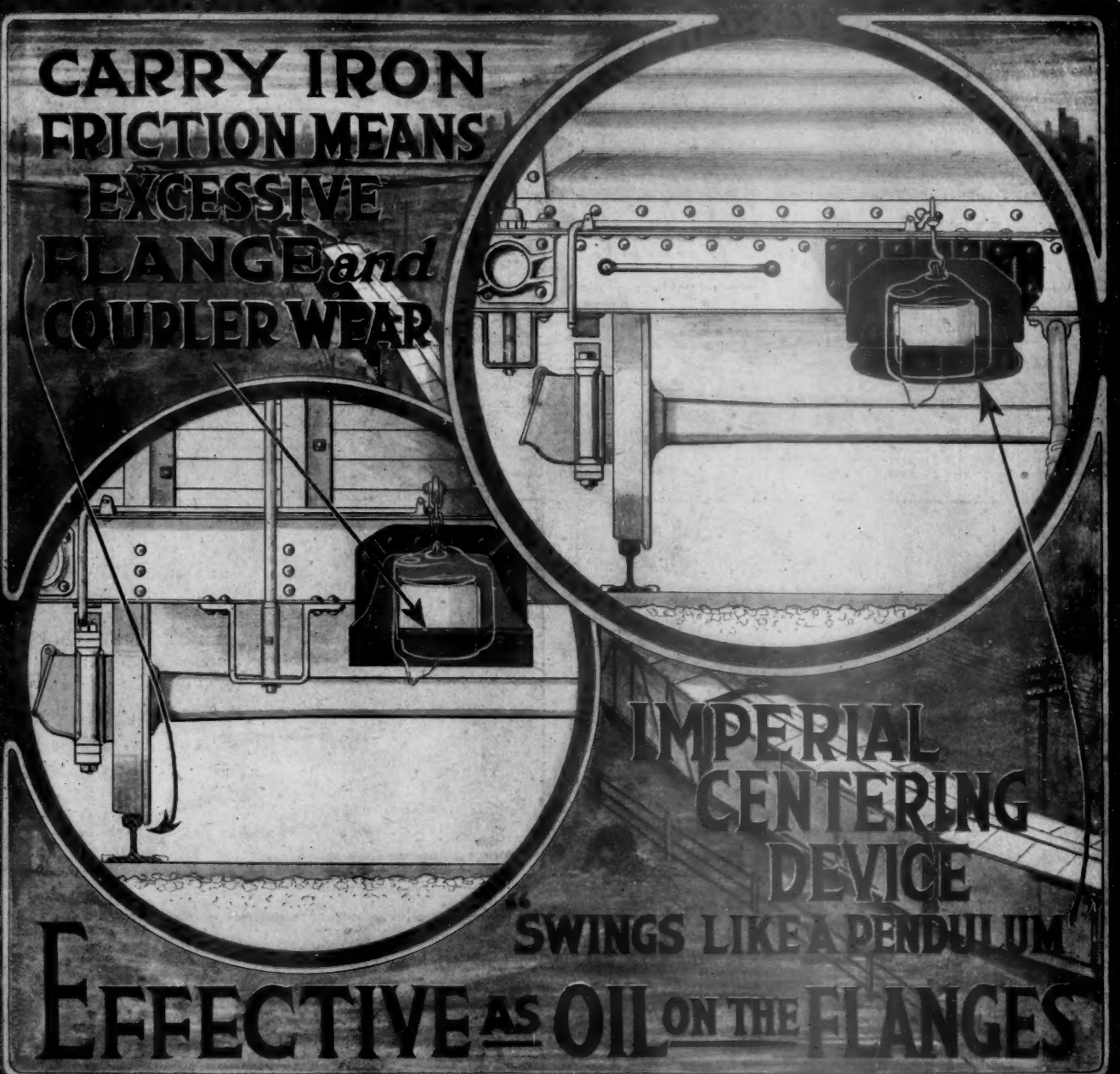
SIXTY-SECOND YEAR

NEW YORK: Woolworth Building
CHICAGO: Transportation Building

NEW YORK—JULY 27, 1917—CHICAGO

CLEVELAND: Citizens Building
WASHINGTON: Home Life Bldg.

**CARRY IRON
FRICTION MEANS
EXCESSIVE
FLANGE and
COUPLER WEAR**



IMPERIAL APPLIANCE COMPANY

CHICAGO

GREAT NORTHERN BUILDING

NEW YORK

SINGER BUILDING



CHASE GOAT BRAND PLUSHES AND CHASE IMITATION LEATHER

Quality standards are fixed and dependable

Several months ago a seat cover of Chase Plush was sent to us with the statement that it had been in continual service for twenty-four years

L. C. CHASE & CO.

89 Franklin Street, BOSTON. 326 W. Madison Street, CHICAGO. 321 Fourth Avenue, NEW YORK. 303 Majestic Bldg., DETROIT.

THERMOSTATIC CONTROL
PRESSURE VAPOR
**GOLD
SYSTEMS**
COMBINATION ELECTRIC
HOT WATER-VENTILATION

IS YOUR HEATING MAINTENANCE CHARGE HIGH? WHY NOT APPLY A SYSTEM THAT WILL CUT THIS IN HALF?

Gold's Thermostatic Control System Saves 50% in Steam Consumption,
Uses Less Pipe and Fittings—Positively Gives a Uniform Temperature.

Thermostatic Control Can Be Applied to Your Existing Systems

GOLD CAR HEATING & LIGHTING CO., 17 Battery Pl., New York

RAILWAY UTILITY COMPANY

Sole Manufacturers

"Honeycomb" and "Round Jet" Ventilators
For Monitor and Arch Roof Cars, and all classes of buildings; also
"Electric Thermometer Control"

of Car Temperatures.

721 W. FULTON ST. Write for 1328 BROADWAY
Chicago, Ill. Catalogue New York, N. Y.

DICKINSON DEVICES

Cast Iron Smoke Jacks
Light Fire-Proof Smoke Jacks
Ventilators All Materials
Cast Iron Chimneys
Cast Iron Buildings
Telephone Booths

PAUL DICKINSON, Inc., 3354 South Artesian Ave., Chicago

SARCO MINERAL RUBBER ASPHALTS

SARCO No. 6 Waterproofing
SARCO Bituminous Putty
SARCO 5-M Paint
SARCO Refrigerator Compound

SARCO Mineral Rubber Floors
SARTAC-Damp-Proofing
SARCO R. S. A. Specifications
SARCO Roof Cement

SARCO PRODUCTS INSURE PURITY AND RELIABILITY

Promptness—Service—Efficiency

SARCO PETROLEUM PRODUCTS COMPANY
Formerly STANDARD ASPHALT AND RUBBER CO., and
THE PETROLEUM PRODUCTS CO.

CHICAGO

SHERWIN-WILLIAMS
RAILWAY LINE
"SHORTEST ROUTE TO BEST RESULTS"
A PRODUCT FOR EVERY RAILWAY USE
THE SHERWIN-WILLIAMS Co.
777 CANAL ROAD N. W. CLEVELAND, OHIO

ESTABLISHED 1840 STAR
SPECIALTIES
STAR BRAND
BLOCKS
BRIDGE and
WRECKING
BLOCKS
Catalogue R G
sent free
on application
BOSTON & LOCKPORT BLOCK CO.
110 Conder St., East Boston, Mass. 33 South St., New York City
413 Fort Dearborn Bldg., Chicago, Ill. 103 Market St., San Francisco

Better Observance of Signals Is Obtained By Using Cab Signals

As developed in connection with the Simmen System, cab signals are practical, reliable, low in first cost and maintenance cost, and adaptable to a variety of traffic conditions.

**Simmen Automatic
Railway Signal Co.**

1575 Niagara Street
Buffalo, N. Y.

Write for our booklet
"Progressive Signalling"

The Rail Joint Company

61 Broadway, New York City



Continuous Rail Joint

Continuous, Weber, Wolhaupter and 100% Rail Joints.
Standard—Insulated—Step—Frog and Switch
Protected by Patents.

Grand Prize, San Francisco, 1915



FOR elevators, dredges,
lumbering, mining, oil-
well drilling, suspension
bridges, stump-pulling,
cranes, derricks, ships' rig-
ging and every other form of
wire rope use.

Ask for illustrated
catalogue

American Steel & Wire Company

Chicago New York Cleveland Pittsburgh Worcester Denver

Export Representative: U. S. Steel Products Co., New York

Pacific Coast Representative: U. S. Steel Products Co.
San Francisco Los Angeles Portland Seattle

Railway Age Gazette

Volume 63

July 27, 1917

No. 4

Table of Contents

EDITORIALS:

Employees as Molders of Sentiment.....	131
German Railways as Indemnities.....	131
A Little Lesson from Britain.....	132
Mechanical Department Valuation.....	132
"Car Shortage," Commodity Prices and the Cost of Living.....	132
Car Shortage Again Reduced.....	133

NEW BOOKS

.....	134
-------	-----

LETTERS TO THE EDITOR:

Follow-Up Correspondence Overdone.....	134
How the Allies Can Reduce the Traffic Congestion.....	134

* Illustrated.

MISCELLANEOUS:

*South End of the New York Connecting Railroad.....	135
Activities of the Railroad's War Board.....	139
Grain Claim Hearing.....	140
Collision in the Glasgow Subway.....	140
Rolling Stock and Machinery Valuation; W. R. Maurer.....	141
Washington Correspondence.....	145
Organization for Efficiency on the Chicago & North Western.....	146
Decision in Transcontinental Rate Case.....	147
*Electric Interlocking Installed at a Busy Crossing.....	152
Lessons from the Freight Congestion; J. E. Campbell.....	153
Railroad Trainmen as Missionaries of Public Opinion.....	154
Car Conservation Meeting at Chicago.....	155
The Mechanics of the Chilled Iron Wheel.....	157
Relocation of Freight Equipment.....	158
GENERAL NEWS SECTION.....	159

The average employee in a commercial business recognizes that his interests and his company's interests are identical.

Employees As Molders of Sentiment

Unless the business prospers he cannot hope for increased wages, and consequently he promotes the welfare of the concern in every possible way that he can. He is not only energetic in discharging his routine duties but keen to seize opportunities to raise his company in public esteem. Unfortunately, railroad employees have been lacking in this respect and much can be accomplished if they are properly stimulated. Sometime ago T. J. Foley, general manager of the Illinois Central, discovered what far-reaching results followed a common sense expression of opinion by a conductor favorable to his road. This led him to consider the possibilities of enlisting train service employees as missionaries on public relations in conjunction with their duties in daily contact with the patrons of the company. In a bulletin, summarized elsewhere in this issue, he calls the attention of trainmen and enginemen to the good effects of a statement of fact now and then, when in the interests of the road's welfare, and announces that he intends to issue circulars from time to time, setting forth concrete and illuminating statistics concerning the affairs of the Illinois Central and the railroad situation generally. Some of the employees, prejudiced by a tradition of antagonism toward the management, may not be of much assistance in the campaign that Mr. Foley contemplates, but the more intelligent men will be able to accomplish much if they are sufficiently courteous in presenting their ideas to the traveling public. It is obvious that they are not trained debaters and that, should they be too insistent in expressing their views, they might do more harm than good. Therefore, the importance of tact and caution should be strongly impressed on them. The possibilities of a campaign of education through train service employees are indeed great. Perhaps no other one factor could more effectively assist the railroads in securing recognition of their real needs than a general presentation of their side of the case by these employees. No less important than the direct advantages to the railroads accruing from this plan would be the educational benefits to the men which would be derived from a series of circulars such as Mr.

Foley contemplates. When train service employees learn the truth, they will realize that the carriers cannot be milked without end, but must be nourished and fostered if the public is to have satisfactory service and employees better wages.

German Railways as Indemnities

The German railways proved one of Germany's strongest weapons in launching the war; they have proved one of her most dependable weapons for carrying on the war. Are they going to prove one of the means for securing peace? The London Statist in a recent issue observes that the time has now come when the allied governments should begin considering the question of indemnities. The allies, it believes, should be prepared when peace negotiations get under way to say what they will or will not allow if Germany represents that she has already incurred liabilities of five billion pounds sterling (\$25,000,000,000). There should also be carefully studied and considered, it goes on to observe, what possessions of Germany—railroads, banks, mines, shipping, etc.—it is reasonable to look upon as disposable for the payment of indemnities. "There is one very important category of properties which ought to be looked upon as available for paying indemnities; and it is the railways. The German governments, speaking generally, own their railways; and those governments clearly ought to be made to hand over their railways, even if not a single mile is left to them, to make good all the losses inflicted upon countries like France, Belgium and Serbia." Imagine a country having to lose its railways in this fashion! Think of a modern industrial and commercial nation in these days without its railway lines! Surely this is a cold blooded, soulless proposition. But, then, is it so bad, considering the things that Germany has done? "Nobody who has any regard for human justice, or human prosperity," says the Statist, "will seriously dispute that all damage done, say, in the occupied provinces of France, in Belgium, in Serbia and so on, ought to be made good to the uttermost farthing. If Germany is allowed to burn down private houses, to massacre the inhabitants, and to kill their cattle, then future German governments meditating a war of

revenge, will feel that they may safely run the risk. If, on the contrary; every penny that can be taken hold of is used to pay to the uttermost all damage done, future governments will think twice before they engage in a fresh war of revenge."

Many of the lessons of the war emergency, as some of us have learned, are different from ordinary lessons mainly in degree, or frequency or intensity, not different in kind. This is illustrated in the last accident report of the British Board of Trade, noticed in another column. In a collision due to an error in manual block signaling, the operator at one of the stations, Station A, was a woman, and the driver of one of the trains was a boy of 17 years; two abnormal elements in the case due to war conditions. But it is to be noted that the mistake or inefficiency chargeable to the operator was not due to her being a woman, and the driver's mistake was not due to his youth; in both cases it was lack of training. Judging by facts of real life and not by book precepts, one concludes, without doubt, that the trouble was inexperience; the lessons which those two should have learned, but did not, are acquired only by practice. The Board of Trade inspector does not, of course, censure the company for employing women or boys, under the present stress; and it is not for any one else to say that there was any culpable neglect in the training of these novices; but for present or future situations the warning is, simply, to stick to well-settled principles. If a girl needs a year's training the officer in charge must be alert and begin the training, if possible, a year before she is going to be put at work. If a motorman is going to be entrusted with responsibilities requiring varied experience, the experience must be provided, even if it has to be produced artificially. Forethought, inspection, testing and other safeguards are required always; the present demand is for more forethought, more patient inspection, more care to see that no tests are omitted. The War Department, we are told, is going to "learn from England's errors"; let us do the same.

MECHANICAL DEPARTMENT VALUATION

IN view of the difficulties that have been experienced by the mechanical departments of many roads when starting the Federal valuation work, an article by W. R. Maurer, mechanical engineer of the New York, New Haven & Hartford, is printed elsewhere in this issue giving a number of timely suggestions on mechanical valuation work. Mr. Maurer has had considerable experience in various valuations made of the New Haven and having about completed the Federal valuation, is well qualified to make constructive suggestions. It must be remembered, however, that these suggestions apply directly to the work on the New Haven and to the valuation district in which that road is located, and that some of the suggestions made by Mr. Maurer may not be applicable to other districts, as the practices have not been generally standardized.

In the preparation of original cost to date schedules, too much dependence cannot be placed on the figures furnished by the accounting department as to the completeness of the information desired. Many additions and betterments have not been recorded and these in the aggregate will represent a large amount of money. If the mechanical department does not give this most careful attention, the credit for these expenditures will be lost. Many improvements have been made in the shop of which there is no record. The work of ferreting out these items should be started well in advance of the arrival of the government parties for it is a large task. It is necessary that a man thoroughly familiar with the mechanical department equipment be in

charge, or directly connected with the valuation work done in that department.

Some roads use a more comprehensive form of recording the inventory on shop machinery than that shown by Mr. Maurer. This it seems, should be governed by conditions and what the local valuation district board desires. The matter of inventorying the small tools has been the source of some discussion. Some claim that if the work is left entirely in the hands of the local foreman a lot of material will not be recorded due to the workmen being reluctant to show the number of tools they are keeping in their lockers. Some roads have found it necessary to make a very complete search in order to get a correct record of this class of material.

Contrary to the opinion held by some railroad men, the equipment and material under the jurisdiction of the mechanical department forms an appreciable percentage of the physical value of a road. There is so much detail and such a large number of individual items in the mechanical department that the work of valuing the equipment in its charge should be placed in the hands of a man who is thoroughly familiar with that department and with what has been done to the equipment and shops. The mechanical department organization should do its full share of the valuation work and thus protect the interests of the company.

"CAR SHORTAGE" COMMODITY PRICES, AND THE COST OF LIVING

THE Council of Defense of Illinois has been investigating the situation with respect to the production of coal in that state. A number of coal operators who appeared before the council this week testified, as reported in the newspapers, that "increased railroad facilities, especially additional coal cars, would lower the price of coal in Illinois." This view is doubtless correct. Increased railroad facilities would tend to lower the prices of many commodities throughout the United States. The inadequate expansion of the railroads within recent years has been one of the causes of the increases in the cost of living, and, paradoxical though the statement may seem, it has also injured many producers by reducing the prices they otherwise would have received for their products.

To recognize the fact that the inadequacy of railroad facilities has had these effects is not, however, to condemn the managements of the railroads. It is merely to condemn the policy which has limited railway expansion. That policy has not originated with the managements. It has originated partly with the shippers, many of whom now complain that they cannot get enough cars. It is chargeable still more largely to the anti-railway agitators and politicians who have persisted in reducing the profits of the railroads regardless of consequences. If the roads had been allowed to make reasonable profits during the last ten years the prevailing car shortage and congestion of traffic would not exist, or at least would not exist to the degree that they do, and the adverse effect which they have upon the welfare of the country would not be produced.

It is a generally recognized fact that the rates charged for transporting agricultural products, coal and other commodities from the points of production to the points of consumption affect both the prices which the producers receive and those which the consumers pay. Another fact, which is even more important, but which is not so generally recognized, is that the price which the producer can get and the price which the consumer must pay are largely determined also by the adequacy and character of the transportation service rendered in moving commodities from the places where they are produced to the places where they are consumed. Take coal, for example. We need not theorize regarding the effect of the car shortage on the prices received and paid for it. Under the conditions existing for some time we have

had, on the one hand, great industrial centers in which the demand for coal for manufacturing and other purposes has suddenly and enormously increased. On the other hand, we have all over the entire country, and in most cases remote from the great industrial centers, coal mines with a productive capacity far exceeding their maximum past output. The connecting link is the railroad. The railroads have moved more carloads of coal from the mines to the consuming centers within recent years than they ever did before. But the demands of the consuming centers have exceeded the capacity of the railroads. Therefore, the prices at the consuming centers have advanced to unprecedented heights, in spite of the fact that more coal has been delivered at these points than ever before. The mines, on the other hand, in spite of the fact that they have produced more coal than they ever did before, have not been able to get enough cars to move all the coal which they could produce. Since their productive capacity has exceeded the transportation capacity available the prices at the mines have not advanced as much in proportion as they have in the consuming centers, and in consequence relatively the largest profits which have been made in the coal business have been made not by the operators, but by the coal speculators in the large industrial centers. If the railways had been able to move more coal the operators would have been able to have sold more and made more money from a larger output, while at the same time the consumers would have had to pay less, because the supply would have been nearer equal to the demand.

The same reasoning applies to agricultural products. The farmer will get relatively the best prices for his products, and the consumer in the large industrial centers will pay relatively the least for them when the railway facilities are sufficient to move all the crops of the country when market conditions are favorable and within a reasonable time. On the other hand, when transportation facilities are inadequate the supply moved to the industrial centers is insufficient and prices there go up, while at the same time the tonnage left upon the farms is excessive and in consequence the prices received by the farmer are less than they otherwise would be. In these circumstances, the speculator, through whose hands the products go from the farmer to the consumer, is the man who makes relatively the largest profits.

There is another feature of the situation which often is overlooked. This is that the drastic regulation of railway profits in recent years, by preventing the construction of new railway lines, has hindered the opening up of new territories, and has thus limited the increase in the supply of agricultural products, of forest products, of products of mines and of almost every other class of commodities. This also, of course, has tended to increase the cost of living.

It will be readily understood that if railway transportation suddenly should be entirely suspended there would be a great increase in the prices of all kinds of commodities in the large centers of population and industry and at the same time a sharp decline in the prices of commodities at the points of production. Now, a deficiency of railway transportation differs only in degree from a complete interruption of it and consequently its effects, although less serious, are similar. Our policy of regulation having failed to recognize the fact that the adequacy and quality of the service rendered has just as important an effect upon the prices which producers receive for their commodities and which consumers must pay for them as the rates which the railways are allowed to charge, the result has been that we have got low rates, but not adequate facilities. The main trouble with our entire policy of regulation is that it has been founded upon a false principle. This is that the great object of regulation should be to restrict railways to a net return which will barely avoid confiscation of their proper-

ties. The fundamental principle of regulation should be that the railways should be allowed to earn a net return which will be sufficient, and no more than sufficient, to enable them adequately to develop their facilities and service. We shall make no progress with the solution of the railway problem until our regulating authorities adopt and act upon this principle.

CAR SHORTAGE AGAIN REDUCED

THE rapid reduction of the freight car shortage since the organization of the Railroads' War Board, in spite of a large increase in the volume of traffic at a season which usually shows considerable decrease, is potent evidence of the value of centralized control which was put into effect when the regulation of freight car supply was delegated by the board to its sub-committee, the Commission on Car Service, under new car service rules adopted April 26. On May 1 the car shortage was 148,627, greater than it has ever been before at that time of the year. On June 1 it had been reduced to 106,649, although the amount of freight handled in May was greater than in April, and on July 1 the shortage had been still further reduced to 77,144, a decrease of nearly 50 per cent in two months. The statistics showing the increase in business in June are not yet available, but it has been shown by government reports that the tonnage of bituminous coal handled was 26 per cent greater than in June, 1916. Many methods have entered into the accomplishment of this result. Many of them, such as the unusual efforts that have been made to increase the mileage per car per day, to increase the train load, to get cars loaded and unloaded more promptly, and to have them loaded to capacity, are by no means new, but they have been made more effective by pressure of necessity as well as by the patriotic impulse which has brought about the hearty cooperation of shippers and regulating authorities.

A new factor in the situation has been the fact that the freight equipment of the country has been pooled under the direction of the Commission on Car Service. This commission not only has kept constantly in touch with the requirements of railroads and shippers for cars needed for particular shipments, and has arranged for providing them, but in addition to conducting the campaign for greater efficiency in the use of equipment has freely exercised its power to order the movement of cars in large numbers from roads on which they have accumulated to roads where there was a shortage. These cars have been moved mainly in train-load lots from eastern ports to southern and western lines after a most careful study by the Commission on Car Service of the requirements of the situation. In making these distributions of cars the Commission has not attempted to give each line 100 per cent of its ownership. The principle which it has followed was announced in its first general order, stating that roads having on their lines in excess of 100 per cent of their ownership of equipment must so regulate their car handling as not to exceed the percentage as of April 1, or as may be designated by the commission. The date April 1 was selected as representing in a general way what may be called the normal for prevailing conditions of traffic, after six months of regulation by the Commission on Car Service.

NEW BOOKS

Railroad Valuation and Rates. By Mark Wymond. Published by Wymond & Clark, 909 Rand McNally building, Chicago. 344 pages, 5 in. by 8 in. Bound in buckram. Price \$1.50.

This book is intended primarily as a treatise on the principles of rate-making and their relation to valuation and rate regulation by an author who has had some 30 years of experience in connection with the promotion, construction, operation and valuation of railroads and in making investi-

gations and engineering reports, and has also had considerable experience in the investigation of rate questions. For the purpose of obtaining the proper perspective the first four chapters are devoted to the historical development of the railways with special reference to their promotion, construction and reconstruction and capitalization.

The author also says that these chapters are inserted in order to correct the erroneous impressions of railroad promotion and capitalization which many people have gained from a few notorious instances that have been the subject of public investigation. Methods of railroad construction are described in detail for the purpose of showing the elements which enter into the value and the author contends that while the cost of reproduction new is the fair value of the physical property at the time of valuation, the total commercial value of a railroad does not necessarily bear a direct relation to the cost of reproducing its physical property or the amount of its capitalization. He says, however, that if depreciation, other than deferred maintenance, is deducted from reproduction cost to determine the present value and the amount in which railroads will be allowed to earn a fair return, railroad borrowing for the purpose of providing extensions and betterments of existing railroads will be practically barred. The author finds that the valuation will not definitely fix the proper general level of rates, but will merely establish a line below which the general level of rates may not go without being confiscatory, that the rate of return on value will be greater for some roads than for others, and that as to the adjustment of rates in detail the valuation is not applicable.

The entire work is an interesting and unbiased discussion of a subject on which many people have very hazy ideas and it is well worth the attention of all who are interested in the questions raised by the valuation of American roads now being made under the direction of the Interstate Commerce Commission.

Concrete, Plain and Reinforced. By Frederick W. Taylor and Sanford E. Thompson. 885 pages, illustrated. 6 in. by 9 in. Bound in cloth. Third edition. Published by John Wiley & Sons, 432 Fourth avenue, New York. Price \$5.00.

Since the second edition of this well known treatise was published one of the authors, Mr. Taylor, has died. In consequence this last revision is the work of Mr. Thompson and his collaborators. The new edition brings the book up to date with the latest developments in the design and construction of plain and reinforced concrete. With the more thorough establishment of the fundamental principles and properties of this important building material, 50 less pages have been devoted to the properties of cement, aggregates, the theory of proportioning, methods of mixing, etc. On the other hand more space is given to the theory and design of reinforced concrete. Thus 18 pages are devoted in the third edition to flat slab design as compared with 5½ pages on this subject in the second edition. An improvement has also been made in this section in the sub-division of the subject under three separate heads—principles, tests, and design of reinforced concrete. These three chapters constitute an extensive rewriting of the original material. The chapter on tests in particular shows the benefit of the material available since the last edition. The discussion of the strength of plain concrete has been extensively revised as well as the chapters on the mixing and depositing of concrete. The trend of modern practice is indicated by the smaller space devoted to rammers. Also in the chapter on mixing, where the earlier volume called attention to the advantages of machine mixing, the latest one states that "machine mixed concrete may be about 25 per cent stronger than hand mixed." The chapters on the chemistry of hydraulic cement, the proportioning of concrete, the effect of sea water and arches, all written by special authors, appear substantially in the original form but indicate careful revision as to minor details.

Letters to the Editor

FOLLOW-UP CORRESPONDENCE OVERDONE

ATLANTA, Ga.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

American tradesmen have an objectionable habit of bombarding a man with follow-up correspondence without inquiring whether the person addressed has authority to make purchases for the company he represents. It happens that I am a railroad officer and now have in my files probably 150 catalogs of business firms. It is rare that a requisition on the storehouse is turned down if I send it the catalog number, manufacturer, list price, and such information as can be gleaned from the ordinary catalog.

When writing for catalogs I almost invariably state that they are for my files, and material, if purchased, will be ordered through our storehouse. Of course, my name will not usually appear in the transaction anywhere after I make the requisition, as the material is sent to the storehouse and from there forwarded to such destination as I may state in my requisition. However, invariably a request for a catalog is followed by a series of letters from the firm, usually about four days apart, demanding to know why it has not heard from me, why its goods are not being sold in my territory and asking a thousand other questions. The consequence is, in many cases I consign the correspondence to the waste basket and have nothing more to do with the firm. I believe that the follow-up correspondence business is overdone in this country.

IMPATIENT.

HOW THE ALLIES CAN REDUCE THE TRAFFIC CONGESTION

ST. LOUIS, Mo.

TO THE EDITOR OF THE RAILWAY AGE GAZETTE:

In my opinion the solution of the present car shortage in the south is largely in the hands of the allied governments in moving their war materials and supplies.

The allies are handling between a million and a million and a half tons of freight per month to the ports for export. The greater part of this movement originates north of the Ohio and Potomac rivers in the section where cars are most plentiful and if it could be arranged to use South Atlantic and Gulf ports, Norfolk to Galveston, inclusive, to a greater extent, it would mean that cars would be moving under load from the territory where they are more plentiful to the territory where freight cars are mostly needed for return loading.

Notwithstanding all that has been done by the Interstate Commerce Commission and various A. R. A. committees, congestion still continues at the North Atlantic seaboard, where lines have on their rails substantially more than the equivalent of 100 per cent of their ownership, whereas southern and southwestern lines continue to suffer from shortage by reason of having percentages of cars on line ranging from 80 down to 50 per cent of ownership.

During this period when there is a load for every car in existence regardless of where it is, it seems to be an economic waste to move cars empty to bring about the proper distribution of available equipment. Therefore, the foregoing suggestion as to more liberal use of South Atlantic and Gulf ports in the handling of export traffic may have some merit. To accomplish this, it would, of course, be necessary to direct a larger number of vessels to South Atlantic and Gulf ports for loading.

TRAFFIC MANAGER.



Queens Boulevard Bridge, Showing the Construction Plant at the Street Level

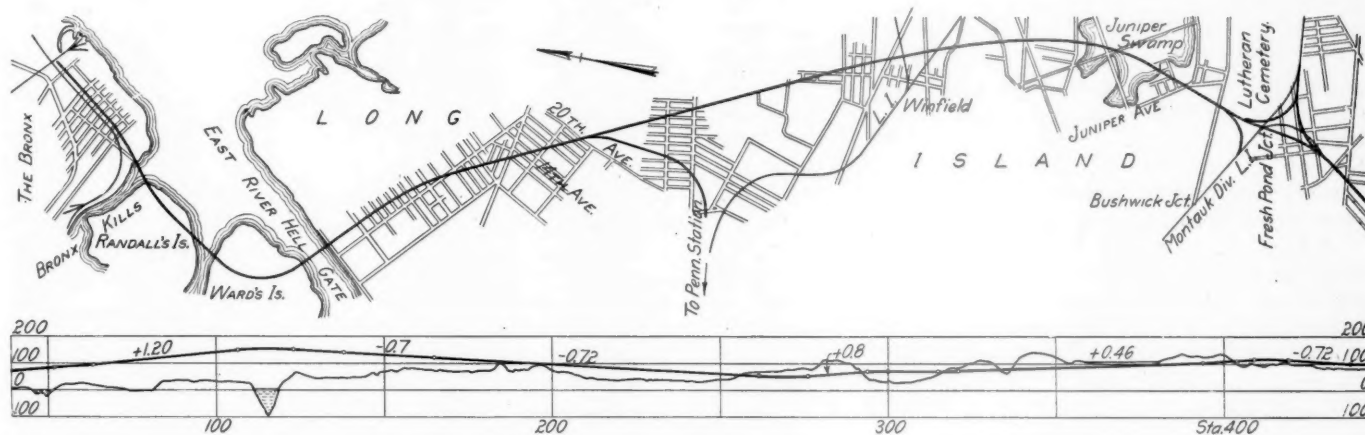
South End of the New York Connecting Railroad

The Four-Mile Line Being Built for Freight Interchange Between the Pennsylvania and the New Haven

THE New York Connecting Railroad which the New York, New Haven & Hartford and the Pennsylvania are now building jointly on Long Island is nearing completion. When finished, it will materially shorten the car ferry service for the interchange of freight traffic, while the north end which is now completed provides a direct connection between the two railroads for passenger traffic. The northern end of the line, known as the East River Bridge division, leaves the Harlem river branch of the New Haven at 142nd street in the Bronx and extends south, crossing Bronx Kill to Randall's island, then over Little Hell Gate to Ward's island, then across the Hell Gate arch bridge to Long Island and terminates at Fourteenth avenue, formerly

vides a direct connection between the two railroads for passenger traffic and through trains are now operated from Boston to Washington.

The new double-track freight line continues south from Twentieth avenue through Woodside and Winfield, crossing the main line and Montauk division of the Long Island and terminates at Fremont street, about one-quarter mile south of Fresh Pond Junction, where connection is made with the Manhattan Beach division of the Long Island, which has been improved to care for the additional traffic. Freight trains will use the Beach line from Fresh Pond junction to the Bay Ridge terminal where they will be broken up and the cars transferred to the Greenville (N. J.) freight



Map and Profile of the Line Between the Bronx and Fresh Pond Junction

Stemler street, in Astoria. This portion of the line has four tracks, two of which are for freight traffic and two for passenger.

The four-track section continues south from Fourteenth avenue to Twentieth avenue, formerly Bowery Bay road, where the passenger and freight lines diverge. The two passenger tracks extend south and west to a connection with the Pennsylvania line leading through Sunnyside yard and the Pennsylvania tunnels under the East river, Manhattan island and the Hudson river. This portion of the line, which was opened for traffic on April 1, was described in detail in the *Railway Age Gazette* of September 3, 1915. It pro-

vides a direct connection between the two railroads for passenger traffic and through trains are now operated from Boston to Washington.

While the new route does not entirely eliminate the car ferry service it has many advantages over the old. At present the freight interchange between the two systems, which amounts to approximately 500 cars each way daily, requires the use of five tugs and 13 car floats, operated by the New Haven via the 14-mile car ferry route that connects the New Haven terminal at Oak Point with the Pennsylvania terminal at Greenville. This service is objectionable because of its length and the difficult navigation through Hell Gate channel where delays are frequent because of ice, fogs and

unfavorable currents. By the new route, the operation of the ferry is simple and its length only slightly exceeds three miles. Contrasted with the present route which requires six hours average time per trip, the new route will effect a saving in ferrying of approximately 11 miles and it is estimated that the time required per trip will be reduced to one hour or less.

While for the present only two tracks will be built from Twentieth avenue south to Fresh Pond junction, provision has been made to widen the cuts and structures for two additional tracks when the traffic warrants the expenditure. On the completion of the two tracks the new line will be placed in service and the old freight transfer route through Hell Gate will be abandoned. Freight originating in New England and destined for points south and west will be routed via the Connecting Railroad and the Manhattan Beach line to Bay Ridge where the trains will be broken up and transferred to Greenville by car floats. The operation of the New York Connecting will be directly in charge of the New Haven to Fresh Pond junction, while from that point to Bay Ridge it will have trackage rights and the New Haven trains will run over the tracks of the Long Island Railroad on this basis.

The agreement for trackage rights for the New York Connecting trains between Fresh Pond junction and Bay Ridge is for through movements only and does not permit local deliveries. Freight to and from Long Island points and from and to points on the New Haven will be interchanged at Fresh Pond junction.

Provision is being made for the electrical operation of the passenger line, but until the completion of the electrification, steam will be employed. The New Haven runs its passenger train with its crews and steam locomotives through to Sunnyside yard. The freight service will also be operated by New Haven crews. The terminal yard and float bridges at Bay Ridge will be in charge of and operated by the Long Island, while the float service between Bay Ridge and Greenville will be performed by New Haven tugs and floats.

CONSTRUCTION FROM TWENTIETH AVENUE TO JUNIPER SWAMP

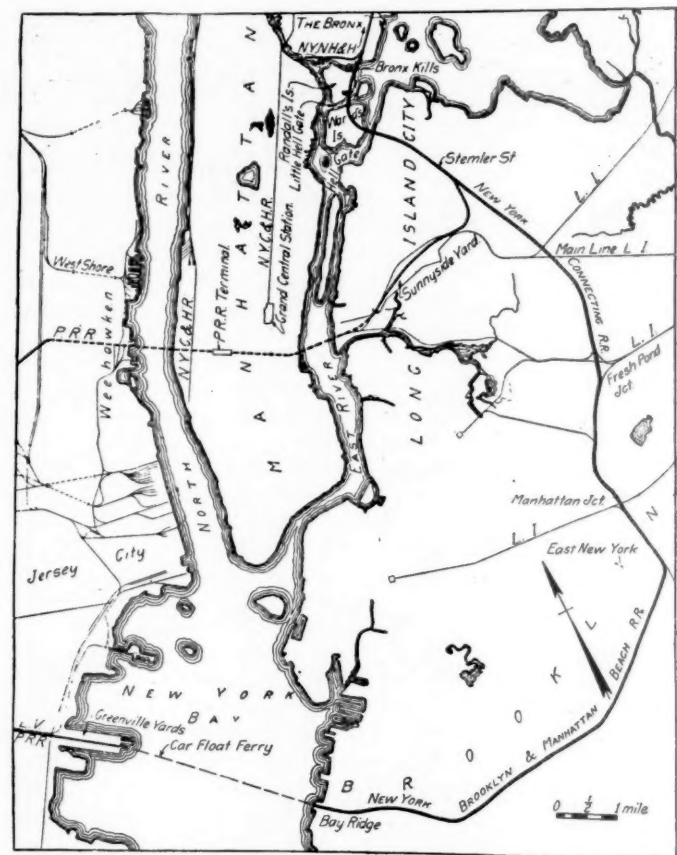
The construction of the line from the passenger connection south to and across Juniper swamp, a distance of $3\frac{1}{4}$ miles, which is being done by the Wilson & English Construction Company of New York City, is nearing completion. The earthwork on this section which is very heavy, totaling 828,000 cu. yd. exclusive of that yet to be done through Juniper swamp, required the making of cuts ranging from 50 ft. to 65 ft. in depth and embankments 45 ft. high. The material encountered in the cuts was largely gravel which was moved by steam shovels and loaded into narrow-gauge cars for delivery to the fills. In the larger fills trestles were provided to carry the construction tracks.

Through Juniper swamp the subgrade is to be 10 ft. below the surface, requiring about 800 ft. of special construction through the soft material encountered that extends to a depth of 36 ft. It has been planned to first place a fill by means of a trestle and when the settlement has subsided, to excavate the cut. Many difficulties have been encountered in building the trestle as the force resulting from the settlement has been sufficient to wreck all that have been built to date. To improve the conditions the swamp will be drained by means of pipes and side ditches that will carry the water to a small brook at Winfield about 6,000 ft. north.

The masonry work on this section consists of 22 concrete bridges, including two arches under and three arches over the railroad and a three-span arch structure over Queens boulevard. At Patterson and Burnside avenues the railroad will be carried over the streets on single span, reinforced arch bridges having clear spans of 84 ft. each. The bridges are both of the filled spandrel type with mass section span-

drel walls connected by means of transverse walls. The arch rings are segmental in form with a span of 83 ft. 10 in. and a rise of 19 ft. 6 in. They are about 36 ft. in height and have a length of 220 ft. The structures are thoroughly waterproofed and are founded on Raymond concrete piles, reinforced with twisted rods.

At Woodside, Sinclair and Metz avenues, the streets are carried over the railroad on reinforced concrete arches. The spandrel walls are of the gravity type and the arch ring, which is three centered, is reinforced with steel rods at both the intrados and the extrados. The walls, which have battered backs, are tied to the arch rings with twisted rods. Abutments are provided between the slopes of the excavation. The exposed surfaces are relieved by horizontal scorings and paneled pilasters and the side walls are surmounted by paneled reinforced concrete hand railings.



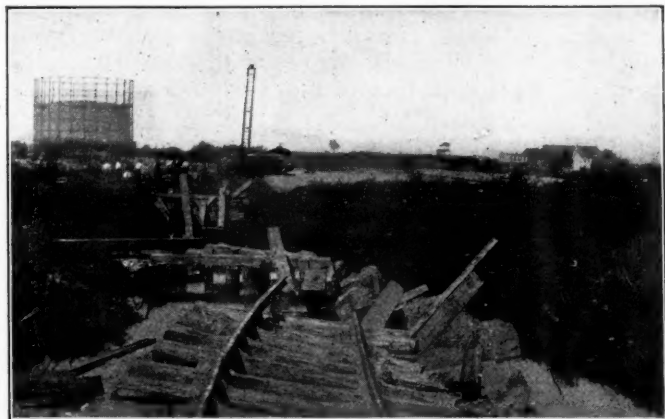
Location of the New York Connecting Railroad

These three structures are built on gravel foundations, no piling being necessary.

Queens boulevard is the most important thoroughfare crossed by the railroad and is 200 ft. in width. Between curbs the street will be divided into three roadways separated by lines of parking 30 ft. in width. This structure is incomplete at present, but it will consist of three arches of 64-ft. span and 14-ft. 6-in. rise. Here the railroad will be carried over the street. The south abutment is to be carried on Raymond piles while the piers and the north abutment will rest on gravel.

At Jackson and Hayes avenues, the railroad is carried over the streets on deck girder bridges having concrete floors. The floors were poured in four sections and were molded in such a manner that the drainage is toward the center and the water is carried off through 6-in. deep holes placed about 3 ft. center to center. The floors are waterproofed with two coats of asphalt and one ply of tar paper, protected from the stone ballast by concrete. Both bridges are founded

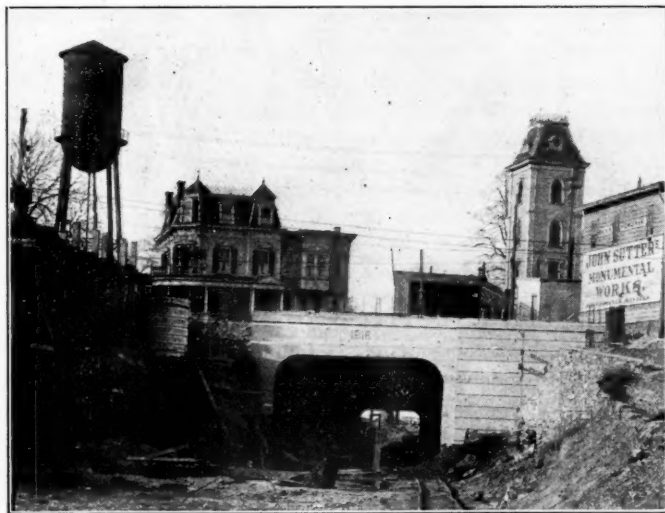
on Raymond concrete piles. At the intersection of Polk and Broadway, the railroad is carried under the street in a subway which consists of an invert or floor and two side walls of reinforced concrete with a roof of 24-in. I-beams, spaced 2 ft. 6 in. apart. At present the subway is built to accommodate only two tracks but is constructed in such a manner that two additional tracks may be placed on the west by removing the short wing walls. The invert and the east side wall are 3 ft. 6 in. thick, but the present west side wall



The Settlement Through Juniper Swamp

is only 2 ft. 6 in. thick and is so placed as to form the middle wall between the two pairs of tracks on the completion of the four-track line.

The subway is reinforced below the roof with steel rods and with wire mesh over the tops of the roof beams where a 5-in. concrete roof is formed by placing concrete between the I-beams. This roof is thoroughly waterproofed and extends 2 in. above the upper flanges of the I-beams. It conforms with the roadbed section of the highway and forms the base of its paving. The spaces between the I-beams



The South Portal of the Tunnel Through the Cemetery

under the roof will be utilized for such pipes and ducts as it is necessary to carry across the subway. The hand railings will be of reinforced concrete, relieved with paneling and rubbed to a finished surface. Wing walls will be provided at the portals, the faces of which will be relieved by horizontal scorings.

At several other streets this same type of construction will be followed and where the subways are long enough to warrant them, refuge niches will be provided about 30 ft. apart. The drainage is effected by a channel 4 in. deep in the in-

vert, covered with perforated steel plates which support the ballast.

The subway that carries Roosevelt avenue over the tracks is also of the same type, but the construction was complicated by the presence of the Astoria, Woodside and Corona elevated line. It was necessary to support the elevated structure during the construction of the railroad and to provide foundations for the steel supports below the level of the tracks. While the foundations of the elevated structure are in the same general line as those carrying the highway, they are in no way connected. To provide sufficient bearing surface these foundations were spread. The structural steel supports of the elevated are carried up through the highway floor in such a manner that there is no contact, the two structures being entirely independent of each other.

THE SECTION SOUTH OF JUNIPER SWAMP

That portion of the line south of Juniper swamp, about one mile in length, is being constructed by P. McManus, Inc., Philadelphia, Pa. The earthwork on this section amounted to 153,000 cu. yd. One of the interesting fea-



The Concreting Plant at Woodside Avenue

tures here is the tunnel and the walled cut now under construction through the Lutheran cemetery. The tunnel extends northward from Metropolitan avenue for a distance of 516 ft. where it joins the walled cut section that extends 650 ft. further northward, terminating at the bridge under Juniper avenue.

The tunnel which is rectangular in section with an invert, sidewalls and roof of reinforced concrete, is being constructed by the cut-and-cover method. A trench is first excavated on both sides in which the sidewalls and a part of the invert are built. The roof is next built, after which the excavation is completed and the remaining part of the invert or floor finished. Because of the narrow width of the trenches this method renders the bracing of the sheeting less difficult and the earth remaining between the sidewalls affords support for the forms of the roof.

The construction of the tunnel was complicated by the necessity of supporting Metropolitan avenue which is an important thoroughfare. The street traffic, including two street car tracks, is supported by eight steel girders that span the excavation. The road surfaces and sidewalks were formed by planking resting on these girders. As a further complication, it was necessary to support one side of a two-

story frame residence. During the excavation this support was accomplished by means of beams resting on bents placed parallel with the house. After the trench was formed vertical posts were inserted that rested on the sheeting. This left the way clear to place part of the invert and the sidewall beneath the house. As the concrete set, vertical timbers resting on the invert were placed as supports and the first timbers used were removed. The roof of the tunnel was then formed around these vertical timbers and as they are removed the apertures are filled with concrete.

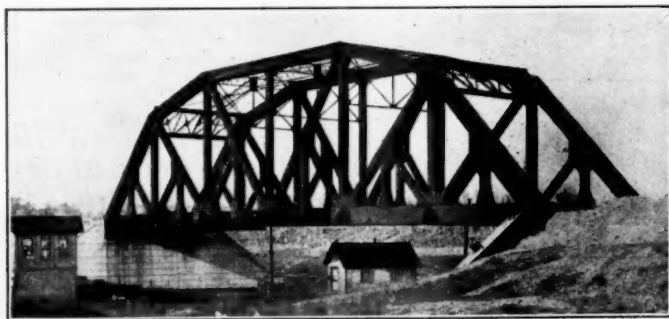
While at present the tunnel is built to accommodate only two tracks, the same general scheme for future extension is followed as was described above. The present west side wall is so placed as to form the middle wall on the completion of the four-track line. Ducts for electrical equipment are provided back of the tunnel walls and within the side walls of the cut. Refuge niches are provided every 50 ft. throughout the tunnel. About 20,400 cu. yds. of concrete and 1,855,000 lb. of steel reinforcement is required for the tunnel and the retaining walls in the cut.

At the intersection of the Montauk and Manhattan Beach divisions of the Long Island, the new line is to be carried overhead on a double-track truss bridge having a span of 175 ft. The bridge will rest on concrete abutments already completed. In addition to the structures mentioned there will be a highway bridge under Firth and Marion streets near Juniper swamp, a railroad bridge over Fremont street and a small bridge will cross the open cut in the cemetery. The abutments of the proposed bridge at Juniper avenue are extensions of the sidewalls of the cut through the cemetery.

CONSTRUCTION METHODS

Because of the location of the line it was not practical to bring the materials to the site of the various structures by rail and instead they were transported by barges up Newtown creek and unloaded into motor trucks for delivery to the job.

Where practical, two or more structures were built from the same construction plant. At Woodside, Sinclair and Metz avenues the materials were unloaded from the trucks and shot down inclines at the various streets where shelters



Crossing Over the Long Island Tracks at the Cemetery

were provided for the cement. The $\frac{3}{4}$ -yd. mixer was placed on a flat car and a track was built between the three streets to permit the moving of the plant. A locomotive crane delivered the materials to the mixer and the concrete was spouted to the forms from an elevator carried on the flat car. At Queens boulevard, where the street passes under the railroad, the materials were unloaded from the motor trucks at the street level. A stiff-leg derrick delivered the material to the mixing platform which was placed at the level of the tracks, near the south abutment. An elevator was provided at the mixer and the concrete for the south abutment was spouted from this elevator to the forms. To place the concrete in the piers and the north abutment, a train of dump cars and a dinky engine were provided. The concrete was

spouted from the elevator to these cars which were then moved to the proper place and dumped on unloading platforms from which spouts radiated to the forms.

The track laying contract has been awarded to P. McManus, Inc., of Philadelphia. The 26 miles of track is being laid with the Pennsylvania standard 125-lb. rail with screw spike construction, six spikes to each tie plate. The spikes are being driven with an Ingersoll-Rand "Little David" air-driven drill equipped with a special clutch and wrench made in one piece and geared for low speed. Two men are required to operate the device which is controlled at the drill by hand. The air is furnished by an Ingersoll-Rand portable gasoline air compressor that has a capacity for driving three of the drills and a wood-boring machine



The Crossing of Jackson Avenue

for preparing the spike holes at the joints where the plates are not used.

In placing the spikes a gang of trackmen work in advance of the drill and place the spikes in the holes of the tie plates by hand. The spikes are then given a turn by a hand wrench just sufficient to hold them in place when the drill is applied. The spike-placing gangs are then followed by the drill men who permanently seat the spikes.

This project is being carried on under the direction of A. C. Shand, chief engineer, and H. C. Booz, assistant chief engineer of the Pennsylvania. C. S. Bissell, principal assistant engineer of the New York Connecting Railroad, southern division, is in charge of all construction.

NO "RIGHT TO STRIKE."—As the result of recent labor troubles on the Swedish State Railways, the Government has now laid it down that the state is unable to recognize that railway employees have the "right to strike" under any conditions, as railwaymen stand in a different category from any other class of employed person. The reason for this decision is rather interesting. Until the beginning of this year there had never been a strike on the Swedish State Railways, but two broke out recently owing to the demands of the auxiliary and temporary employees for higher wages. The strikers were not supported by the regular staff, no doubt because if their demands had been granted the temporary employees, whose numbers have largely increased as the result of war conditions, would actually have received higher wages than the permanent staff. The railway administration informed the strikers that their demands could not be granted, as they had received more than one increase since the beginning of the war, and added that no employee who went on strike would be employed again. Eventually the disturbance was quelled, and the administration effected an alteration in the conditions of payment, but firmly adhered to its refusal to re-engage anyone who had actually gone on strike. In laying down the principle that the "right to strike" cannot possibly be accorded to railwaymen, the Swedish Government has made use of an interesting argument. Such a right, it points out in a manifesto, cannot exist unless the employer has the corresponding right to declare a lock-out, and this cannot be exercised by the management of a railway undertaking, since it would result in paralyzing all transport.—*Railway Gazette*, London.

ACTIVITIES OF THE RAILROADS' WAR BOARD

The Railroads' War Board has addressed a plea to public service commissions and all state, county and municipal authorities throughout the United States, urging co-operation with the railroads in a suspension during the period of the war, of "all efforts not designed to help directly in winning the war."

The specific suggestions are embodied in a letter forwarded by Chairman Fairfax Harrison. In the letter Mr. Harrison said:

"The present emergency has imposed upon the railroads a very unusual strain in transporting men, food, coal, munitions and materials in augmented quantity. This burden, while cheerfully undertaken, requires every ounce of energy, every unit of rolling stock, every dollar of capital, every bit of supplies and coal which the railroads can command.

"It is the opinion of this committee that all efforts not designed to help directly in winning the war should be suspended during the period of the war. Indeed, this is obviously the thought of President Wilson in his appeal to the country on April 16, 1917, which included the following statement:

"It is evident to every thinking man that our industries must be made more prolific and more efficient than ever, and that they must be more economically managed and better adapted to the particular requirements of our task than they have been."

"Therefore this committee earnestly recommends that during the war the railroads be required by the public authorities to make improvements and carry out projects involving the expenditure of money and labor only when they are absolutely essential for war purposes or public safety. The prevailing high interest rate on money, the difficulty of raising money in competition with the tax free issues of the government, the excessive cost of supplies and labor, the delay in obtaining material, the possible blockade of traffic and the diversion of labor all contribute to make non-essential construction undesirable during the war.

"The committee considers that the erection of new stations, elimination of grade crossings, are among the non-essential improvements which should be deferred at this time. We respectfully suggest that the basis for consideration of new projects at this time should be the increase in the capacity of the carriers for national service.

"Furthermore, we urge your co-operation in eliminating all passenger service which is merely convenient and not justified by public necessity during the present emergency situation."

The Railroads' War Board has taken further steps to induce shippers and producers to co-operate with the railroads in protecting the coal supply in the Northwest during the coming winter by urging the railroads engaged in the lake carrying coal and ore trade in the Pittsburgh district to induce all coal operators on their lines having contracts to supply coal to the Northwest via the lake ports, to load during the remainder of the season at least 50 per cent of their daily supply of cars for such ports there to be transhipped to the Northwest.

Chairman Fairfax Harrison of the Railroads' War Board, in a message addressed to the railroads in the Pittsburgh district, said:

"Although the railroads have in recent months been handling from 23 to 30 per cent more coal than in the corresponding months of last year, a smaller proportion has been shipped to the lakes than last year, and, in consequence, there is still uncertainty as to whether the Northwest will be supplied with sufficient coal to meet its requirements next winter.

"We deem it now, as we did at the beginning of the Lake season, of the utmost importance that every effort should be

made by the railroads involved to satisfy the requirements of the Northwest for water borne coal.

"On the statistics of performance so far this season, it is apparent that unless efforts are renewed and coal is moved at a greater rate for the remainder of the season than in the past months, the requirements will not be satisfied. At the same time the situation of ore accumulated at the furnaces in the Pittsburgh district for national requirements is involved."

The Commission on Car Service has issued a circular letter to the chief operating officers of the railroads inquiring whether their companies have organized a special department to promote car efficiency. In the letter the commission says that this subject is worthy of such attention that in its opinion a special organization can accomplish much and effect a saving in operating cost that will far exceed the expense of the organization, and at the same time, make many more cars available for the shipping public. "All railroads have depended upon instructions issued from time to time to all employees to bring about the results desired," the circular says, "but most of the division officers and employees have so many duties that they are unable to specialize on the subject of getting the most out of each car. We consider it of sufficient importance to railroads, that some competent officer be designated to follow up the matter of intensive car loading, making it his special duty and given such help as required. A great many railroads have already organized such departments with most gratifying results."

The circular lists the following as a few of the important points to which this department should give special attention:

OUTBOUND

1. Orders for cars must be based only on the daily capacity of the shipper to produce load, and ship.
2. Placing of cars for loading should be done at a time of the day to save (a) the least delay to cars; (b) to cause minimum delay to shippers loading arrangements.
3. Careful spotting of cars to avoid extra switching and to permit most expeditious loading.
4. Personal supervision over loading of cars to insure their being loaded to full carrying capacity at the same time to minimize the risk of damage to contents.
5. Prompt delivery of instructions to billing agent after car is loaded.
6. Prompt movement of cars from loading track to train yard and then see that cars are forwarded promptly.

INBOUND

7. Prompt marking of cars received for switching to delivery tracks.
8. Prompt and careful placement of cars for unloading.
9. Personal supervision of and prompt unloading of all cars.
10. Prompt removal of cars when unloaded.

GENERAL

11. Reconsignment of cars should be discouraged at all times and every encouragement made to have cars billed direct to final consignee.
12. When reconsignments are unavoidable, insist upon such orders being received at destination before cars arrive in train yard.
13. Arrange some effective system for prompt handling through direct channels of diversions or reconsignment orders to avoid delaying any cars awaiting disposition, which causes so much extra switching.
14. Arrange for the chief operating officer and the head of the intensive car loading department to be furnished a daily check (preferably at 9 a. m.) of all loaded cars held for any reason at terminals or other stations, classified as between shippers and consignees, and by commodities for the following reasons:
 - (a) Disposition not received
 - (b) No way bill
 - (c) Embargoes
 - (d) Accumulations
 - (e) Disputes over charges
 - (f) Car defects
 - (g) Demurrage
 - (h) Other causes.
15. Prompt repairs for loaded cars, making light repairs with minimum switching and have prompt switching to and from repair tracks.

THE ENGLISH CHANNEL TUNNEL.—Arthur Fell, M.P., Chairman of the House of Commons Channel Tunnel Committee, recently wrote to the prime minister asking him to afford an early opportunity for discussing and ascertaining the opinion of the House on the Channel Tunnel question. The request is signed by over 110 members of all parties.

GRAIN CLAIM HEARING

Following an investigation undertaken on its own initiative, the Interstate Commerce Commission conducted hearings on claims for loss and damage to grain shipped in bulk, before H. C. Wilson, attorney-examiner, at Minneapolis, Minn., from July 9 to 14; at Omaha, Neb., from July 16 to 18; and at Chicago from July 18 to 21. At these hearings the commission itself introduced from 25 to 30 exhibits. The Great Northern, the Northern Pacific, the Minneapolis, St. Paul & Sault Ste. Marie, and the Minneapolis & St. Louis presented evidence at Minneapolis, the Union Pacific at Omaha, and the Chicago grain carrying lines at Chicago. Only a few shippers testified and to give the shipping interests time to prepare their case, the hearing was adjourned until September 18 at Chicago.

Various facts were brought out in the record which indicate the necessity for investigation. Wide disparities were shown between weights taken at country points and at terminals, indicating that losses in grain are a question of scales as well as of defective cars. Other evidence pointing to the same conclusion showed that some loading points were constant sources of claims, whereas adjacent points on the same line rarely claimed loss or damage to their grain. The Minneapolis & St. Louis testified that it had placed 500 new cars with inside lining into grain service as an experiment, and found that more claims resulted than from the use of old or defective equipment.

Among the factors contributing to the origin of claims at country loading points are the various methods of weighing, which are rarely under the supervision of a disinterested party. Track scales are available only at the larger points. Other shippers are required to depend upon automatic, hopper or wagon scales, and in some instances, on estimated weights. The testimony seemed to indicate that the automatic and wagon scales are not sufficiently accurate to be dependable and a large number of roads refuse to consider claims on the basis of estimated weights.

Scale tolerance and natural shrinkage were also urged as proper considerations in settling claims. The states of Missouri, Kansas and Minnesota recognize natural shrinkage and provide for it by statute. The Chicago, Rock Island & Pacific has a tariff which provides for the deduction of $\frac{1}{8}$ of one per cent in the weight of wheat and $\frac{1}{4}$ of one per cent in the weight of corn for shrinkage, and this tariff has been recognized as reasonable by the Interstate Commerce Commission. The United States Bureau of Standards also has placed its stamp of approval on shrinkage as a proper consideration in weighing grain. It was urged by some that scale tolerance should be allowed for in settling claims. It was brought out that a tolerance of $\frac{1}{2}$ lb. per thousand is permitted in some sections to allow for variations in the register of scales.

The question was raised whether it was proper for freight claim agents to report to the traffic department. Competitive considerations, it was suggested, are apt to cause a freight claim officer under traffic jurisdiction to be more liberal in recognizing claims than he would be if in the operating department.

The hearing seemed to indicate that disinterested supervision of weights at country points is highly essential. The Rock Island recommended the plan it uses in Oklahoma as a means of achieving this end. For some time it has had an agreement with the Oklahoma Grain Dealers' Association, under the terms of which inspectors in the employ of the road examine the scales of the shippers periodically at a charge of \$5 for each inspection. The Rock Island also keeps very close records of grain shipments on all of its lines. The shipper is asked to fill out a certificate stating how many pounds of grain he loads, on what kind of a scale it is weighed, how it is loaded, the condition of the car, etc. On the same certificate the forwarding agent re-

cords the name of the shipper, the name of the consignee, the destination, the car initials, the car number, the name of the loading elevator, the number of the seal, and the condition of the car after loading. In addition, an in-transit record is kept by trainmen which states in detail whether leakage is discovered and where, when and why grain is transferred from one car to another, the track scale weight before and after such a removal, whether car seals are broken at any point and why, and the number of the new seal including the name of the employee applying it. On this same form, which accompanies all waybills, the destination agent records the condition of the car as received and other essential information. These records are sent to the office of the general superintendent of freight claims, and if any claims are subsequently made on cars with a clear record, they are not considered. Knowledge of the existence of these detailed records has had a wholesome effect on the shippers, which has been reflected in large reductions in claim payments per car in recent years. In the fiscal year 1915, the average claim payment per car was \$1.54, in 1916 it was \$1.16 and in first seven months of 1917 it was only 61 cents.

COLLISION IN THE GLASGOW SUBWAY

The British Board of Trade has issued the report of Col. J. W. Pringle, on a rear collision which occurred April 26, on the Glasgow subway railroad, which did slight damage but which was of interest because of peculiar circumstances.

This subway encircles the city of Glasgow, Scotland, and traction is by cable, at 12 miles an hour. The cars are lighted by electricity, current being taken from a roadside conductor by means of skids attached to the cars. The block signaling is controlled manual, without any track circuit control. By means of treadles each signal goes to the stop position behind a train and can be cleared only after the train actuates another treadle at the station in advance.

In this case the leading train, consisting of two cars, was stopped because of an accident to its skid, causing the electric lights to fail. Station-mistress Webster, finding herself unable to clear the signal at the entrance of the block, for the following train, assumed that the electrical apparatus was out of order; and she proceeded to ask for a clear signal by telephone; but the operator at the other end, Station master Fulton, did not give a concise and definite refusal and she took his answer to be affirmative; and so she cleared the signal and the second train was admitted to the block section and ran into the first one, which had been delayed by difficulty in starting, because of trouble with the grip.

The inspector blames both operators; the one at Station A for using colloquial terms instead of the phrases prescribed by the rules, and the one at Station B (Fulton) for giving a reply, when, according to his own testimony, he did not distinctly hear the message.

Driver Gibson, in charge of the leading train, a lad of 17 years, allowed his train to stand in the tunnel without a tail light. He had had two months' experience as a gripman and 11 months' experience as conductor. There were no hand lamps on the cars, for use in emergencies. The electric headlights and tail lights had gone out and the oil headlight was also dead; so Gibson gave the conductor the remaining oil tail light, to enable him to walk forward to the next station. Gibson had intended immediately to restore the electric tail light by getting current through the skids on the rear car, but the collision happened before he could complete the necessary connections.

The inspector finds that failures of the treadles occur rather often, the cause, usually, being the low speed of the train; and these irregularities are not properly reported and attended to. These frequent failures have caused station masters to lose confidence in the signal apparatus, and to have too hasty recourse to the use of the telephone, which is not a suitable method of working high frequency traffic.

Rolling Stock and Machinery Valuation

Suggestions for the Benefit of the Mechanical Department Forces in Handling the Federal Valuation Work

By W. R. Maurer

Mechanical Engineer, New York, New Haven & Hartford

ON March 1, 1913, the "Act to Regulate Commerce" was amended requiring the Interstate Commerce Commission, "to ascertain and report in detail as to each piece of property owned or used by a common carrier, the original cost to date, the cost of reproduction new, the cost of reproduction new less depreciation, and an analysis of the methods by which the several costs are obtained."

In carrying out these instructions the Interstate Commerce Commission segregated the work issuing "orders" covering the various subdivisions. Valuation Order No. 8, issued November 21, 1914, stipulates that every steam carrier subject to the act, shall prepare statements in duplicate covering the carriers' equipment and machinery owned or used, giving in the "Register of Equipment" a description of the property in such detail as to enable one to get sufficient information to identify and price it, and in the "Report of Original Cost to Date" not only the first cost but all other elements of cost entering into the final cost of a unit in place.

The accounts covered and the forms to be used for each are as follows:

Account	Register Form No.	Original Cost No.
37 Roadway Machines	70	71
44 Shop Machinery	72	73
45 Power Plant Machinery	74	75
46 Power Substation Apparatus	76	77
51 Steam Locomotives	78	79
52 Other Locomotives	80	81
53 Freight Train Cars	82	83
54 Passenger Train Cars	84-85	86
55 Motor Equipment of Cars	87	88
56 Floating Equipment	89	90
57 Work Equipment	91	92
58 Miscellaneous Equipment	93	94
Memorandum of Additions and Betterments..	95	..
Detail Supporting Statement of Original Cost to Date .....	..	96

The forms are now printed and can be obtained from the General Secretary of the Presidents' Conference Committee of Federal Valuation of Railroads in the United States, with offices at Philadelphia.

The registers are lists of machinery and rolling stock without prices. They are to be prepared by the carrier, being supervised and checked by the mechanical and electrical sections of the Division of Valuation. The original cost to date schedules are to be taken primarily from the carriers accounting records and are to be verified by the accounting section of the government, which has full charge of this portion of the work. The mechanical men should prepare the registers while the accounting forces should compile the cost returns; the latter department will require help from the mechanical department as described later.

One of the first requisites is an efficient organization. The officer having charge of collecting the data for the register should be thoroughly familiar with the equipment; if, however, he is not, then those next in authority must. If the carriers' records are complete, the clerks can readily prepare the registers for steam locomotives, other locomotives, freight train cars, passenger train cars, floating equipment and possibly roadway machines, but no attempt should be made to compile from office records the registers for the other accounts as much information will be overlooked.

It is to be remembered that the registers are to be filed in Washington after which the government will send representatives to the carriers' property to verify them, also to collect additional data not called for by these forms. The railroad

company is required to place with each government mechanical and electrical party a representative called "pilot" who is familiar with the property that is to be inventoried and who is to assist in identifying, measuring and ascertaining facts bearing on its age, wear, decay, maintenance and condition. Therefore the carriers' pilots should be experienced equipment men, capable not only of estimating quantities and petty costs, but also of pointing out special conditions affecting the value as well as accurately judging the state of the maintenance.

The first field men required will be those for shop machinery, power plant machinery and power substation apparatus. With each pilot there should be at least one man to assist in collecting preliminary data for the registers. The pilots for locomotives, cars, floating equipment, etc., are not absolutely required until the arrival of the government representatives for these accounts. Before attempting to prepare the data called for by Order No. 8, every one connected with the work should familiarize himself with the latest pamphlets issued by the government entitled "Classification of Investment in Road and Equipment of Steam Roads" and the "Instructions for Field Work of the Mechanical and Electrical Sections of the Division of Valuation, Interstate Commerce Commission" which can be obtained for five cents a copy from the Superintendent of Documents, Government Printing Office, Washington.

As the registers and original cost to date forms are to be typewritten, requiring typewriters with especially long carriages, it has been found desirable to establish a typewriting bureau where not only the equipment registers but all other large work such as reports of Order No. 11, Order No. 12, etc., can be typewritten. A steady flow of work from the various sources will keep the department busy, while if this large work is done by the departments concerned many more large carriage typewriters will be required as well as more operators. The forms sent to the government are to be "carbon backed." Special care is to be taken to see that the carbon paper is of such quality that the backs are not easily damaged and to save time as well as to insure good impressions "double faced" carbons are used to advantage.

Nothing is to be gained by curtailing the data for the equipment register. Although much of it might be recorded at the time of the joint field inspection, the government field men's time is limited. They are being constantly pressed for greater output or mileage. In their haste, important things might be missed resulting in a loss to the carrier. As it is, the second inspection often corrects errors and omissions.

ACCOUNT 37—ROADWAY MACHINES

All roadway machines should be distinctly numbered so that the register can be readily verified by the field party. For all classes of roadway machines in addition to the data called for on D. V. Form 70, wherever it is possible give in the remarks column the division or district on which the machines are located and all data that will enable them to be readily identified. For instance, on portable boilers give the type, height and length, steam pressure, number, diameter and length of tubes, size of firebox, heating surface, kind of grate, fittings, injectors, etc. Ditching machines, which are ordinarily operated while temporarily mounted upon a

flat car, but which are capable of self propulsion on carriers' tracks, should be included in this account.

D. V. Form 313 is to be used for listing small tools with each machine.

ACCOUNT 44—SHOP MACHINERY

Before the carriers' field party starts out to obtain the data for the Shop Machinery Register, special printed or mimeograph forms called "Carriers' Field Sheets" for each class of machinery should be prepared, on which is to be recorded the data collected. This will insure that nothing is overlooked as on each form there should be a place for all of the items called for by the captions of the register, as well as other necessary items. The following will suggest some of the items to be mentioned:

INVENTORY OF SHOP MACHINERY—Account 44.

Date	Inventory No.
Location	Old Shop No.
Name of Bldg.	Mfrs. No.
Mfrs. Name	Size
Kind	Gears, Kind
Drive, Kind	Safety Guards
Equipment	Foundation, Material
Year Purchased	Quantity
*Description of Drive	Inventoried by
Remarks	

*Show details of pulleys, belts, countershafts, etc.

The field force send these carriers' field sheets to the office where the necessary data is drawn off. Provided there are no working drawings, the field force should attach sketches showing dimensions and material of all guards and home made attachments. These sketches should be in such detail as will enable a computer to estimate the quantities of the various material used in the construction as well as the cost, provided the actual costs are not available. Home made machines should be treated in a similar manner. These carriers' field sheets are extremely valuable as reference when the government representative is in the field.

Account 44 (with Account 45—Power Plant Machinery) is the most difficult to handle, not only because the data for the register must be collected in the field but also because the line of demarkation between this and the various other accounts is quite obscure. It is frequently found that one line of pipe will have to be allocated to three different accounts such as No. 20—Shops and Engine Houses, No. 32—Power Distribution System, No. 44—Shop Machinery. Another source of confusion is whether to classify engine and boiler room machinery under Account 44 or 45. If this machinery is located in distinct buildings it is to be included in Account 45, but if it is installed in a shop as part of the shop equipment it is to be included in Account 44.

Departments.—Each department or building should be listed separately, identification numbers being assigned to each machine or unit, no two machines on the road to bear the same number. In renumbering the machines sufficient blank numbers should be left between departments to take care of the growth for at least 10 years. Number the various units in a department in logical order so they may be easily checked on the register.

Power Plant.—For the method of handling power plant machinery, Account 44, see Account 45.

It must be borne in mind that power distribution systems of every description, which convey power from the boiler or engine room to any other building or department are not to be listed under Account 44, except the line shafting. All piping in shop buildings supplying power to the shop machines, including the leads from the mains to the machines should be accredited to Account 20. All wiring in shop buildings, including the leads from the mains to a motor starting device, should be accredited to Account 20. The motor starting device itself and the wires between such device and motor are considered a part of the motor and should be accredited to Account 44.

Machines.—Each machine should be described in such

detail as to give a comprehensive idea of it, mentioning all special constructions and attachments that would enhance its value. Give the builders' number, also a description of all special safety appliances and guards not furnished with the machine. Countershafts need not be described unless they are of special design. All separate cranes should be numbered and a complete description given. Cranes which are furnished with and are a part of a machine are not to be numbered but are to be mentioned in the machine description. Give the name plate data of a motor and control equipment of motor-driven machines.

Main and jack shafts should be tabulated by diameters, the total length of each diameter in a department being listed as one item. A description and quantity of shaft couplings should also be given. Prepare a 11 in. by 17 in. drawing showing the various styles of shaft hangers used, typing each style. On the register show the type, drop, length of the box and the bore. List line shaft pulleys in the order of their size; give the width of the face, the material, and state whether they are solid or split. Give the aggregate length of each width of belt and classify it as to ply and material.

Use D. V. Form 313 for small tools. All small tools of the same size and kind should be listed and priced as one item. The lists are to be made in duplicate. A legend should be inserted on last sheet of D. V. Form 72, stating that the list of small tools has been prepared on a separate form. The gathering of the data for small tools is a tremendous task, but can be lightened somewhat by furnishing to each shop and engine house small blank books, two for each foreman or gang boss, in which they are to list the small tools under their care. These to be checked in the field by the shop machinery pilot, particular attention being given to descriptions and omissions. These books to be sent to the office and copied on D. V. Form 313.

Patterns and templates are to be listed on D. V. Form 313. The lists should show the quantity and cost with a description of them. All patterns or templates at one location are to be grouped.

The following are to be included in Account 44; locomotive boiler washout systems including piping and foundations, boiler front racks, pipe racks, ladder racks, apparatus for drying lumber including blowers and motive power for same, trucks, portable benches, also machinery in oil houses.

The following belong to Account 20; heating coils for blower outfits, blower piping for conveying hot air from the blower to the dry kiln, fire fighting apparatus, fixed benches, and oil storage tanks and their piping located outside of buildings.

ACCOUNT 45—POWER PLANT MACHINERY

Note the cautionary remarks given under Account 44 regarding the proper classification of engine and boiler room machinery.

Boilers, engines, etc., located in detached buildings and used for furnishing power, heat or light to stations, or other buildings are to be classified as Power Plant Machinery, Account 45. Each unit in a power plant should bear a distinctive number which will not be confused with similar numbers at other locations. It is suggested that the first units shown in the registers for this account are the boilers and their appurtenances followed by the other boiler room machinery, after which should be listed the machinery in the engine room.

Boilers.—Give a full description of the boilers including the type, steam pressure; number, size and length of tubes; heating surface; size of drums, if any; material of headers, if any, and small fittings. In the remark column should be shown the amount of excavation in cubic yards and the builder's drawing number. Where drawings are not available prepare sketches of the general arrangement in such

detail as to permit calculations of quantities of material used in the settings.

Stokers.—Numbers should be assigned to each stoker and the company's drawing numbers should be given for reference.

Auxiliaries.—The auxiliaries should be listed separately, giving a complete description of them as well as the catalog reference. All condensers and feed water intake lines from a private water supply to the boiler or engine room should be included in Account 45. Condenser and feed water intake lines from city mains should be noted in Account 45 only from the point where the line enters the power plant building. The line between city main and building should be accredited to Account 29.

Piping.—Measure the piping and classify it according to the material, thickness, service, size and kind of joints. List all valves and all fittings that are four inches and over.

Pipe Covering.—Give the lineal feet of each size of pipe covering, as well as the material, thickness, make, etc. If molded coverings for valves and fittings have been used give the catalog reference. If plastic covering has been used, give the kind, thickness, area, etc.

Engines and Turbines.—Give the name of the manufacturer, show the type, whether condensing or non-condensing, vertical or horizontal, steam pressure, revolutions per minute, cylinder dimensions, style of valve gear and governor, size of fly wheel, and if they are part of the generator, so state. If the engine was built with an electric generator on the same base plate by one manufacturer, it should be considered as one unit and full details of both given in the same record.

Electric Generators.—Give the name of the manufacturer, name plate data and distinctive characteristics, including the number of main poles and interpoles.

Wiring.—List all wire in lineal feet, specifying material, size, whether solid or stranded, kind and thickness of insulation and covering. State whether it is run in conduit, on knobs, or cleats, or a pole line. List the conduit in lineal feet, specifying the material, size and number of bends if the conduit is $2\frac{1}{2}$ in. or over in diameter. List condulets, insulators, etc., with catalog references.

Switchboards.—Give each complete switchboard an identification number. Describe each panel separately, indicating its functions, size, material, kind of finish, and supports. List all instruments, switches and other equipment on the front of each panel, noting at the same time all integral parts such as voltmeter resistances which may be in the rear of the panel, giving distinctive characteristics with the name plate data or catalog references. Give similar data for the apparatus on the back of the switchboard without distinguishing between the panels. List all bus bars, brackets, clamps, insulators, etc., with catalog references.

Miscellaneous.—List the transformers, circuit breakers, switches, switch cabinets and similar apparatus, giving the name plate data, or catalog references. For lightning arrester equipment, add the kind of mountings and insulators. Spare apparatus located in power plants, but not in service nor connected for service is unapplied material and is not to be listed on the register.

ACCOUNT 46—POWER SUBSTATION APPARATUS

This account should be reported in the same manner as Account 45.

ACCOUNT 51—STEAM LOCOMOTIVES

"Date Built" is the original date locomotive was built. If a new boiler was applied, the date the boiler was built should be entered in the remark column. Light weight is the weight of both the engine and tender without coal, water, fire or engine crew. If no records exist regarding this item,

then it will be necessary to weigh a sufficient number of engines having various sizes of boilers and fireboxes, also tenders of various capacities in order to establish an amount to be deducted from the weight in working order, which is the weight usually found in office records. In the remark column list the important betterments such as "equipped with superheater, new boiler," etc. If the locomotive was purchased second-hand, it should be indicated in this column, also the date of acquisition. An additional list should be prepared showing the following data at the date of valuation; number, length and size of tubes, and the length and width of firebox.

A list on D. V. Form 313 should be prepared showing the standard tool equipment for locomotives used in the various kinds of service. This list should show quantities and detail prices as well as an aggregate price of the complete equipment. A list is to be kept of all locomotives scrapped after date of valuation so that government party will not be looking for items which are non-existent. The new locomotives placed in service after the valuation was made should also be recorded.

ACCOUNT 52—OTHER LOCOMOTIVES

This classification covers electric and similar locomotives, but not cars with motor equipment. The suggestions for the steam locomotives and motor cars apply to Account 52 also.

ACCOUNT 53—FREIGHT TRAIN CARS

The cars should be reported in "Lots" or "Series," giving the first and last numbers of the series with the number of units in the series. When certain cars have for any cause been removed from revenue service, the actual live car numbers in that series or the individual numbers of the cars removed should be shown. The capacity and weight of the cars should be shown in pounds, and the length shown should be the length over end sills. The width is the width over the car body. The height is that over running boards on house cars, to the top of the sides on open cars and to the top of the floor on flat cars.

In the remark column show the important betterments, such as draft gear, steel underframe, safety appliances, etc. For tool equipment on caboose cars use D. V. Form 313. If the cars were purchased second-hand, indicate the fact in this column together with the date of acquisition. As in the case of locomotives, etc., keep a list of the freight train cars removed from and those added to revenue service after date of valuation.

ACCOUNT 54—PASSENGER TRAIN CARS

Two forms are used for cars under this classification; D. V. Form 84 for motor cars, trailer cars having multiple unit equipment, and for gasoline and gas electric self-propelled cars. D. V. Form 85 is to be used for steam railroad cars and for trailer cars without multiple unit equipments.

The remark column is to be used for amplifying the description of the underframe and superstructure, also for listing the major betterments. If the cars were purchased second-hand, indicate in this column together with the date of acquisition. Use D. V. Form 313 for tool equipments. Keep a list of passenger train cars removed from revenue service after the date of valuation.

ACCOUNT 55—MOTOR EQUIPMENT OF CARS

D. V. Form 87 should be used for multiple unit equipment either on motor or trailer cars. Also for trailer cars equipped with train wires for power or control and for motor equipment of gasoline or gas-electric, self-propelled cars. Form 87 is not to be used for trailer cars not equipped as before described. The motor equipment is to be shown

for each car or series of cars in the same order as is recorded, the equipment of which it is a part.

ACCOUNT 56—FLOATING EQUIPMENT

On D. V. Form 89, after "Station," give the port of registration. List floating equipment in alphabetical order according to its classification or kind. In the remark column give material of hull. Use form D. V. 313 for tools or other appurtenances.

ACCOUNT 57—WORK EQUIPMENT

Use D. V. Form 91 for rail work equipment and D. V. Form 89 for floating work equipment with the title amended to read Account 57—"Floating Work Equipment." All work equipment should be distinctly numbered so that the register can be readily verified by the field parties. The various types of work equipment should be entered on the register in the same manner as the corresponding revenue equipment covered by Accounts 51 to 56 inclusive. The listing of machinery should follow that for Accounts 37, 44 and 45. If units of work equipment were converted from those of other accounts, the date of transfer and from what it was converted should be shown in the remark column. Electrical motor equipment on cars used in work service belongs in Account 55, while the car bodies and trucks are to be accredited to Account 57. Use D. V. Form 313 for small tools and appurtenances.

ACCOUNT 58—MISCELLANEOUS EQUIPMENT

In this account belong horses, harness, wagons, auto trucks, etc. In describing horses give the height, weight, etc.; of automobiles give the make, age and such other data as will enable one to get a clear understanding of the unit listed.

GENERAL

Upon the arrival of the Government mechanical and electrical field forces, a definite understanding should be reached as to the methods to be followed in checking the carriers' registers and collecting the additional data required for the government field sheets. The carriers' pilots should be instructed to agree upon the record of condition and maintenance, which is to be recorded on the field sheets as "Normal" (N), "Above Normal" (A. N.), or "Below Normal" (B. N.), provided the field sheets show the facts upon which the conclusions were based; but if the pilots should not agree as to "Probable Service Life" nor "Service Condition Percent" both the original and duplicate should be stamped over "Service Condition Percent" to the effect that railroad representative does not agree as to methods or conclusions to enable the carriers' pilot to sign the field sheets.

When actual costs of home-made machinery or accessories are unknown, the carrier's pilot should be instructed to agree, if possible, with the government's representative upon their estimated cost, due allowance being made for material, labor and overhead charges. These costs will then be entered upon the government's field sheets and are final.

Many of the accounts are provided with a special form of field sheet, each adapted to its particular purpose, upon which is printed a list of the more important details of construction, with blank spaces opposite, in which is to be noted the various items which do or do not appear on the unit being inspected and each carrier should determine whether or not the printed list fully covers his equipment. If it does not, then such other items should be added as will give not only a comprehensive idea of the unit, but also cover the principal additions and betterments to be claimed.

ORIGINAL COST TO DATE

In appraising property usually one of two methods is employed as a basis: (a) "Original Cost to Date," being a

summation of all the costs of a unit in place, from purchase to time of appraisal; (b) "Cost of Reproduction New," being the cost based on present prices. The latter method provides for the inclusion of every element of cost and the basis upon which substantially all modern appraisements are made.

The act stipulates that the Interstate Commerce Commission is to ascertain the "Original Cost to Date" and the "Cost of Reproduction New." In turn the Commission asks the carriers to furnish statements showing the Original Cost to Date.

On the older lines, the accounts of many of the constituent roads have been lost or are incomplete. Many conservative paying companies often charged all minor improvements, and at times large ones, to operation. Then, too, the question of additions and betterments is not thoroughly understood by the shops, which are really responsible for addition and betterment costs being properly allocated.

Not one foreman in a dozen appreciates that when a ladder with stiles is substituted for one made of bent hand holds, or a 10-in. brake cylinder replaces an 8-in. one, or a compound pump takes the place of a simple one, that part of the cost of substitution is chargeable to betterments and should be reported. Therefore the accounting records probably do not reflect the true "Cost to Date," which is the only method of appraisal of equipment and machinery to which the carrier is a party.

If the accountants' books do not contain all the costs it behooves the carrier to see that careful estimates are made covering the omissions. It might be well to review the additions and betterments shown in the records to see if they are correct. The mechanical branch is best fitted to make this study. The construction at date of valuation of each engine, car, etc., should be compared with the original detail specifications and the difference noted. These differences constitute some of the additions or betterments for that unit.

Additions are *additional* facilities or devices such as air brakes applied to cars not previously equipped (all labor used in construction and application should be charged).

Betterments are *improvements* of existing facilities such as substitution of steel tired wheels for cast iron wheels. The cost chargeable to the accounts is the excess cost of the new parts over the cost of parts retired. The difference between the labor cost of applying old parts and applying new should be included but not the cost of removing old parts. All prices used should be those current at the time the addition or betterment was made.

For each addition or betterment prepare on 8½ in. by 11 in. sheets a comparative statement showing in parallel columns the costs of the "original" and "final" constructions, giving the quantities, unit prices and costs of both material and labor. To the cost add allowances for overhead charges. The difference between the totals of the two sides is the betterment. It is obvious that if there were no "Original Construction" then the change is an addition, which permits the charging of labor of application. Show the date of the prices, the date the estimate was made and the name of the estimator. From a file of these sheets not only the total additions or betterments applied to any unit may be readily ascertained, but also the correctness of the claim can be verified.

In filling out the original cost to date forms, the units should be reported in the same order as on the registers. The costs to be reported are those contained in the carrier's accounting records. Should these be missing or incomplete, other records or even estimates should be used, indicating the source, name and title of estimator, etc.

Great care should be exercised to see that the costs taken from the accounting records are for the identical units reported in the register as it is sometimes found that a car

or locomotive has been renumbered or replaces another of the same number.

There is quite a diversity of opinion regarding the use of Forms D. V. 95 and D. V. 96. It is suggested that the district accountant be consulted as to the method he desires to be followed in reporting additions and betterments as well as supporting data.

WASHINGTON CORRESPONDENCE

WASHINGTON, D. C., July 24, 1917.

CONSERVATION OF TRANSPORTATION

The Council of National Defense and the various departments of the government are giving a great deal of attention to the transportation problem in connection with the handling of war supplies and are not only co-operating with the railways in many ways to promote the most efficient use of the available facilities, but are also trying to do what they can toward arousing the public to an appreciation of the situation.

The government is extending very effective co-operation in the campaign inaugurated by the Railroads' War Board to utilize the full carrying capacity of equipment. The recommendations which have been sent to shippers on this point by the Interstate Commerce Commission, the Department of Commerce and the Department of Agriculture have already been noted in the *Railway Age Gazette*. The Commission on Car Service has also recently taken this matter up with the Army and Navy and other departments that are ordering vast quantities of munitions and supplies of all kinds, requesting them in placing contracts to specify in the order that cars shall be loaded to full capacity. Very satisfactory replies have been received from the heads of various departments, stating that they have issued orders that the request shall be complied with. Both the Army and Navy and the Shipping Board have issued such orders. The Traffic Executive, located in New York, which handles shipments of supplies for the Allies, is also making it a point to see that its shipments are loaded in full cars and the inspection department of the British Ministry of Munitions of War in the United States has issued a circular to its agents, saying: "The first essential condition is that all cars be loaded to 10 per cent above their nominal capacity and all other conditions must be made subservient to this."

The storage committee of the general munitions board of the Council of National Defense has authorized a statement, saying that the government and every other purchaser of goods must make every effort to buy near the point of utilization so as to make the one necessary railroad haul as short as possible. A number of instances have come to the attention of the storage committee where articles are being manufactured in the East with orders to ship West while the same articles are being made in the West for shipment to the East. This lack of co-operation between buyer, railroad, shipper and consignee, it says, must cease.

As a good example of what grows out of a full understanding, the statement cites the pooling arrangement effected between coal operators, railroads, mines and lake vessels, whereby coal from Lake Erie ports destined for the head of the lakes will be classified and handled so much more efficiently that the equivalent of 53,000 cars will be added to the railway equipment. Some similar co-operative methods will be developed within the next few months to control all government shipments. "It is unthinkable," the committee asserts, "that the present hit-or-miss method should be allowed to continue. Of course, in all shipments, especially of government supplies, nothing less than car lots can be considered satisfactory. There is no way by which the railroad can give preference to, or expedite, a less than a carload lot shipment. Every possible effort must be made to combine

the shipments of different manufacturers, if need be, into full car lots.

"Most industrial establishments are situated so that to make any considerable addition to their storage areas is impossible. At most manufacturing centers, therefore, it will be desirable to create assembly stations for the collection of government freight. Such stations will permit the combination of a number of small shipments into car lots. The accumulation of freight at such local centers will give to the railroad a less fluctuating load, and will make possible the routing each day of a more or less constant number of cars to the several destination points. Thus the freight service will be regularized as is the passenger service, and permit of a more efficient use of rolling stock.

"More and more the motor truck must be used for local deliveries of freight, not only between the plant and freight assembly station, but to consumers at relatively nearby points. This will mean, in many instances, the organization of a joint motor car service by the manufacturers of a given district, to insure that as nearly as possible full motor truck loads may be available for each trip. This motor service will not be in many cases the cheapest method, but motor trucks will probably provide the only means of regularizing the transportation service."

THE STORAGE PROBLEM

The storage committee states that expenditures in excess of \$50,000,000 for terminal storage areas at or near the seaboard will undoubtedly be necessary and that not a moment should be lost in providing these facilities. The equipment which it is necessary to provide for each soldier going overseas amounts to about five and a half tons. This storage load will be put upon the nation before the end of the year and to handle it will require carefully designed and equipped areas, probably 2,000 acres in extent.

The storage policy will provide for four types of storage areas, the term "area" being used as including (1) open spaces such as are required for lumber and the like, (2) partially enclosed spaces such as are used for hay, etc., and (3) fully enclosed spaces, such as warehouses. The types of these storage areas will be (1) at the individual manufacturing plant, (2) at points of assembly within a given manufacturing district to which goods can be hauled by automobile truck or wagon, (3) at points of utilization and of consumption, as at the cantonment or training camp, and (4) at places adjacent to terminal ports and from which goods will be transported to ship by motor truck or lighter.

Dependence must be placed very largely upon local initiative for the provision of ample storage at the point of manufacture, the committee said. Manufacturers making goods for the government, and in fact all manufacturers, no matter what their product or for whom it is made, should be encouraged to expand their storage capacity at once in every possible way.

"We cannot continue to allow manufacturers to dump their products as completed on the railroads without regard to the necessities of the situation," said the committee. "This means more storage for manufactured articles. As the load on the railroads increases, the regularity of deliveries on individual shipments will be interfered with, and if continuity of manufacturing is to be maintained, our manufacturers will have to carry larger stocks of raw material, which will require additional storage."

AVOID TRANSPORTATION WASTE

The general munitions board of the Council of National Defense has also issued a statement calling attention to the importance of conserving railroad facilities.

"The railroad situation is right now the weakest link in the storage problem," according to the board. "Unless we begin at once to take steps to safeguard the railroad situation, by

January 1, 1918, we will have no storage problem, because there will be nothing to store. On account of the car shortage, manufacturers will be unable to secure raw materials or ship their finished products. These facts explain why the railroad factor is strongly emphasized in our statements of policy. A railroad can stagger along for a time under a load far heavier than it is designed to bear. But if this goes too far, signs of congestion begin to appear. And then, if nothing radical is done, an actual tie-up ensues."

The level of efficiency would be reached, the board pointed out, if it could be arranged that each of the myriad articles being purchased by the government for the Army and Navy could be handled once, and only once, by the railroads. To bring this about, nothing should be put into a railroad car except for immediate and direct haul either, first, to a place where it is to be consumed or otherwise utilized, or second, to the seaboard prior to transshipment across seas.

It is quite common military and industrial practice for most munitions to make three, four or more railroad trips before they reach the consumer or the hold of an ocean going ship. Sometimes goods are sent to intermediate distribution points, or to places of assembly, requiring additional, and frequently, unnecessary haul. Sometimes these extra haulings are simply the result of accident or chance. But every extra and avoidable hauling, even where mileage is not increased, will have to be cut out if the railroads are to be an efficient part of our war machine.

"There are some railroad lines in England today, whose entire equipment is being used for army purposes six days out of seven," the statement said. "We may be in a similar situation in this country before the spring of 1918. Unless we rigorously and scientifically conserve railroad facilities, industry's participation in their use will be very meager. We cannot waste and win the war."

POOLING OF COAL SHIPMENTS

On the St. George piers, on Staten Island, New York City, a program to pool all export coal and much of that delivered for the city's consumption was inaugurated on July 23, according to an announcement made by the Tidewater Coal Exchange, which is working in co-operation with the Railroads' War Board and the coal production committee of the Council of National Defense. The St. George piers constitute the shipping terminus of the Baltimore & Ohio and Staten Island railroads.

On August 1, it was said, other piers supplying much of the coal for New York City consumption and for shipment by water from that port, also will put into effect the program for tidewater pooling, in order to hasten boat shipments to New England and other destinations and to release cars as rapidly as possible for other uses. These piers are South Amboy, Port Reading, Elizabeth and Port Liberty.

The Philadelphia piers, on which pooling of coal will take place beginning August 1, are the Port Richmond, Greenwich and Jackson Street piers. The Hampton Roads piers are Lambert's Point, Sewell's Point and Newport News. The Baltimore piers, where pooling likewise will become effective on August 1, are the Canton piers. The program already is in effect on the Baltimore & Ohio and Western Maryland piers, and is said to be working successfully.

In each of these instances coal of like kinds will be run on particular tracks, and each shipper will keep a credit and debit balance with the deputy commissioner of the Tidewater Coal Exchange at each port. Vessels or barges, arriving at port to take on a load of No. 1 coal, for instance, will not have to wait while a particular consignment is extricated from a crowded switchyard, but will take the first cars on No. 1 track.

The total amount of coal likely to be shipped from the four tidewater ports where pooling is to be put into effect—New York, Baltimore, Philadelphia and Hampton Roads—

will amount to 35,000,000 tons. The usefulness of vessels and cars will be greatly augmented thereby.

ORGANIZATION FOR EFFICIENCY ON THE CHICAGO & NORTH WESTERN

The Chicago & North Western has in effect a plan of organization for efficiency which extends from the executive offices to each division of the road. Every second Friday a staff meeting is held in the office of the vice-president of operation at Chicago which is attended by officers of all other departments. Here any matter is discussed which is pertinent to greater economy or efficiency of operation. Similarly, divisional staff meetings are held every Saturday which are called by division superintendents and attended by the division officers, including the division engineer, the trainmaster, dispatchers, roadmasters, master mechanics, etc. The results of these are reported by the superintendents to the general office. In addition, divisional efficiency committees were recently organized, consisting of the division superintendent and the ranking members of the traffic and mechanical departments on each division. Some of the special problems which these committees are required to consider are, maximum carloading, heavier train loads, and the elimination of empty car mileage. These committees meet semi-monthly and report directly to the vice-president in charge of operation.

Although the divisional staff meetings have been taking place for the last two or three years, a special interest has been taken in them recently in view of the critical transportation situation. Typical of the character of these meetings is one recently held at Sioux City, Iowa. Among the subjects discussed were the feasibility of pooling locomotives, increase in prices of materials and equipment, and the possibility, of further economy in the use of materials by all departments.

Among those who spoke at this gathering was Mr. Simmons, a brakeman, who said in part: "There are two ways to get ahead in this world, either increase your income or decrease your expenditures; either accomplishes the same result. Has it ever occurred to you, with the cost of material advancing more than 60 per cent., with the price of coal advancing 30 and 40 per cent., with the cost of gondola cars advancing 110 per cent., and the locomotives we are now using more than double what they were in 1915, that the only thing the North Western has to sell is transportation? With the tremendous advances in the cost of all prices of labor this company is receiving the same price for hauling a carload of hogs from Sioux City to Chicago that it received in 1915, and while the railroad is asking for adequate increases in freight rates, until it receives them it must look to its employees to help meet these increases. By practicing the same methods of economy with the company's material and supplies as we do in our homes (if the price of an article has advanced beyond its worth to try and get along without it or to use just as little of the article as possible) much can be done to meet the situation."

L. Gilbert, roadmaster at Sioux City, stated that in 1913 it cost his subdivision \$390 to relay one mile of track and that in 1916 it cost \$495, or an increase of \$105. Ballast cost \$806 per mile in 1914 and \$1,774 in 1916, or an increase of \$968.

F. H. Lowery, engineman, said that in March, 1917, the total engine mileage on the Sioux City division was 138,000. Had every fireman on the division saved but a single scoopful of coal in each 100 miles fired he would have saved the company more than 12½ tons, computing each scoop as 18 lb. The remarks made by the others who attended the meeting were of a similar character and indicated that officers and employees of the North Western are keenly alive to the pressing necessity for economy and the available means of achieving it.

Decision In Transcontinental Rate Case

Commission Finds Water Competition Temporarily Negligible and Orders Readjustment Until War Is Over

THE Interstate Commerce Commission on July 24 rendered its decision in the various cases involving transcontinental freight rates, in which the commission finds that existing water competition is a negligible factor in affecting the rates by rail between Atlantic and Pacific coast terminals. Rates on commodities from eastern defined territories to Pacific coast terminals lower than the rates on like traffic to intermediate points are found not justified under existing circumstances. The present effective rates on certain specific commodities from all eastern defined territories to Pacific coast terminals are found to be not unreasonably low and not to have been induced by water competition. The present effective rates on other commodities in schedules B and C are found, as a whole, unreasonably low from territories east of the Missouri River to Pacific coast terminals. The rates on barley, beans, canned goods, asphaltum, dried fruits and wine from Pacific coast ports via rail-and-water routes through Galveston to the Atlantic seaboard should be revised to accord with the requirements of the long-and-short-haul clause of the fourth section. The commission's report will be found in 46 I. C. C. 238. A brief abstract follows:

ABSTRACT OF THE COMMISSION'S DECISION

In Reopening Fourth Section Applications, 40 I. C. C., 35, we found that the existing competition by water at the time the report was made, June 5, 1916, between the Atlantic and Pacific coasts, did not justify the relationship of rates then existing. We also found that the maintenance of these low rates on the schedule C commodities named in Commodity Rates to Pacific Coast Terminals, 32 I. C. C., 611, and the maintenance of the rates on barley, beans, canned goods, asphaltum, dried fruits, and wine from California ports, via rail and water, to the Atlantic seaboard, while higher rates were maintained to or from intermediate points, had the effect of unduly preferring the coast points and unduly prejudicing intermediate points. Orders were entered requiring the carriers, on or before September 1, 1916, to readjust the rates on the schedule C commodities in accordance with the terms of our order respecting schedule B commodities. The relief orders which had been issued respecting the rates on barley, beans, canned goods, asphaltum, dried fruits, and wine were rescinded, effective September 1, 1916.

Pursuant to these orders, new tariffs were filed, effective September 1, 1916, containing rates purporting to be in accordance with the requirements. The new tariffs contained many increases in the rates to the Pacific coast on the schedule C items, and in the rates on the California products from California ports to the Atlantic seaboard. Protests were filed with the commission on behalf of a large number of shippers and receivers, representing many localities east of the Missouri River, and on or near the Pacific coast. It was strongly urged that the marked increases would be destructive of certain industries, and would result in material losses on account of unfilled contracts, and that some of the new rates were unjust and unreasonable in and of themselves. The commission thereupon suspended the new rates until December 30, 1916.

On September 9, 1916, the Merchants' Association of Spokane, Wash., filed a petition, alleging that there was not at that time and had not been since April 5, 1916, any water competition whatever between the Atlantic and the Pacific coasts of the United States, and that there existed no justification for the maintenance of lower rates from eastern

defined territories to the Pacific coast than to intermediate points.

On October 17, 1916, by appropriate order, we reopened all of the fourth section applications relating to the rates on commodities from eastern defined territories to Pacific coast ports and intermediate points, and all of the applications respecting rates on barley, beans, canned goods, asphaltum, dried fruits, and wine from California ports to Atlantic ports.

Prior to the hearings the carriers sought and obtained authority to cancel the suspended tariffs and to publish new tariffs containing more moderate increases to and from Pacific coast points. These new tariffs were filed to become effective December 30, 1916, on statutory notice and had the effect of increasing the rates on all the schedule C items from nearly all eastern defined territories to the Pacific coast ports by 10 cents in carloads and 25 cents in less than carloads. No increases were made in the rates to intermediate points in any instance in which the resulting rate would be higher than the rate to the Pacific coast ports. The new tariffs also had the effect of increasing by 10 cents the carload rates on barley, beans, canned goods, asphaltum, dried fruits, and wine from California ports via rail-and-water routes through Galveston to the Atlantic ports, and also of increasing the all-rail rate on canned goods from California points to eastern defined territories from 62½ cents to 72½ cents. The effective date of some of the eastbound rates was subsequently postponed by the carriers until March 1, 1917.

THE SITUATION AS TO WATER COMPETITION

The following figures respecting the ships and tonnage moving via the Panama Canal between the Atlantic and Pacific coasts are said to have been taken from the Canal Record:

	Westbound		Eastbound	
	No. of ships	Tonnage	No. of ships	Tonnage
August 14, 1914, to June 30, 1915.	172	951,044	163	895,614
June 30, 1915, to June 30, 1916.	52	227,103	41	217,285
June 30, 1916, to November 11, 1916.	8	26,223	10	12,935

The evidence showed that two Pacific Coast Steamship Company steamers sailed from San Francisco for Atlantic ports during the latter part of August, 1916; that two American-Hawaiian steamers passed through the canal with eastbound cargoes in recent months, and that two steamers sailed from New York for the Pacific coast in July and one in October, 1916. One steamer reached Charleston, S. C., in September, 1916, carrying 17,000 barrels of flour from north Pacific coast points. There are statements in the record of other sailings and expected sailings, but the table of tonnage moved from June 30 to November 11, 1916, shows that this movement is slight and the evidence indicates that the movement has been irregular and uncertain.

A statement offered in evidence on behalf of Pacific coast cities, compiled from data gathered from marine engineering publications, purported to show that on October 2, 1916, there were building in the various shipbuilding plants of the United States a gross tonnage of vessels of all descriptions approximating 1,600,000 tons. An extract from the consular and trade reports on November 18, 1916, showed steel merchant vessels, building or under contract in American shipyards on November 1, 1916, according to shipbuilders' returns to the Bureau of Navigation, Department of Commerce of the United States, numbering 417 vessels,

of 1,479,946 gross tons. During October, 1916, American shipyards are said to have finished 17 steel merchant vessels of 52,941 gross tons and made new contracts for 17 steel merchant vessels of 77,877 gross tons. It is stated that there were under contract in American shipyards on November 1, 1916, 314 merchant vessels of 960,899 gross tons, which the builders of these vessels expected to launch on or before June 30, 1917.

It is clear, however, that the present service by water between the two coasts of the United States is infrequent, sporadic, and irregular. It is inferable that the great ship-building program now being carried forward in the ship-building plants of the United States will result in bringing into this coast to coast trade a number of ships in the not distant future. Testimony on behalf of the merchants on the Pacific coast showed their disposition and capacity to organize and equip steamship lines for this business in the event of radical increases in the rail rates between the two coasts.

The present situation, however, as to the water competition, is beyond dispute. There is no existing competitive necessity by reason of water service between the two coasts which warrants the rail carriers in maintaining under present circumstances lower rates to the Pacific coast than are normal and reasonable or lower than to intermediate points.

ATTITUDE OF THE RAIL CARRIERS

The rail carriers are before us in this proceeding seeking authority to continue lower rates on a large proportion of all commodities to the Pacific coast than to intermediate points and lower rates from the Pacific coast via rail-and-water routes through Galveston on a limited list of commodities than are applied from or to intermediate points. It is urged that the ability of the boat lines to establish and maintain rates on certain of these commodities between the two coasts that are far below the level of normal rail rates on the same traffic has been amply demonstrated by the rates maintained during the first year the Panama Canal was in operation.

It is stated that it has been demonstrated that the boat lines can make and have made rates between the coasts very much below any scale of rates which we could require the rail carriers to maintain and these carriers now urge their right to maintain such an adjustment of rates as will keep their lines in an attitude of preparedness for the boat competition which sooner or later may be expected again to develop. It is earnestly urged that if the carriers under present circumstances are required to readjust their rates between the two coasts to a level not lower than the rates to or from intermediate points, the water lines, when the boats return to the service, will establish rates at a level that will take the traffic away from the rail lines. An application on behalf of the railroads for relief from the provisions of the fourth section as to these rates must be supported by competent proof as to the then existing competition by water alleged to make necessary the relief sought. In the natural and orderly course of procedure, several months may elapse between the time when the water competition manifests itself and the time when the rail carriers can make effective such rail rates as are necessary to meet this competition.

It is asserted that no sooner would these rates be established than the boat lines would make a further reduction sufficient to secure the traffic, whereupon the rail lines would find it necessary to make a second application involving further time during which the rail lines would be deprived of the traffic. This process might have to be repeated several times before the rates reached a level as low as the boat lines cared to make them. The objection to this course of procedure is that the rail lines would be obliged to lose the traffic to the boat lines before being able to present convincing proof of the necessity for reducing the rail rates.

WESTBOUND COMMODITY RATES

The present commodity rates from eastern defined territories to the Pacific coast are divided into three groups, which have been known under the designations of schedules A, B, and C. Schedule A includes commodities which either are not adapted to water transportation or which originate in territory so far removed from the Atlantic seaboard as to make their transportation by water unlikely. This list includes about 100 items, among which are the following: Threshing machines, agricultural implements, vehicles, many furniture items and fragile articles, and various products of the soil, wheat, flour, etc. Upon these items the rates to the Pacific coast points are not lower than to intermediate points, and these rates are not the subject of consideration in this report. Schedule B includes about 350 items comprising articles which are more or less adapted to water transportation and upon which the carriers have been authorized to continue rates to intermediate points higher than to the Pacific coast terminals by the following percentages: 7 per cent from points in zone 2; 15 per cent from points in zone 3, and 25 per cent from points in zone 4. The zones referred to are those described in Commodity Rates to Pacific Coast Terminals. The list of the articles is quite general and includes certain varieties of agricultural implements, baking powder, bottles, brass and bronze goods, candles, certain mixtures of canned goods, carpets and rugs, clothing, dried fruits and vegetables, certain furniture items, and many other articles. The range of rates on the schedule B commodities varies to a large extent with the carload minimum applied. Most of the articles move on rates applicable to minima of from 20,000 to 40,000 pounds.

The great bulk of the articles move under minima of 20,000, 24,000, 30,000, 36,000, and 40,000 pounds. The rates on items which take a carload minimum of 20,000 pounds vary from \$1.10 to \$2.25 per 100 pounds. Two-thirds of these items take rates to the Pacific coast of \$1.50 or less. The articles on which a carload minimum of 24,000 pounds applies take rates varying from 90 cents to \$2.30 per 100 pounds. More than 70 per cent of these rates do not exceed \$1.50 per 100 pounds. The rates on the articles moving under a carload minimum of 30,000 pounds or more vary from 60 cents to \$2.50 per 100 pounds. There is but one item, viz., talc, on which the 60-cent rate applies from the Atlantic seaboard to the Pacific coast, but there are 16 items which move on rates as low as 75 cents per 100 pounds, and 120 items which move on rates of \$1 or less. One hundred and fifteen items move on rates varying from \$1.10 to \$1.25, while 98 items move on rates which are higher than \$1.25.

Schedule C includes articles which originate in large volume on or near the Atlantic seaboard, are particularly adapted to water transportation, and upon which the rates are relatively low. The list includes approximately 90 carload items, among which are the following: Certain mixtures of canned goods, many iron articles, nails, bolts, nuts, washers, bar iron, sheet iron, structural iron and steel, many paper articles, paints, soap, wire rope, and telephone wire. These articles move in carloads varying from 24,000 to 80,000 pounds. Forty per cent of the items are subject to a 40,000-pound minimum, and the present rates range generally from 65 to 95 cents. Thirty per cent of the items are subject to a 50,000-pound minimum, and the rates range from 70 cents to \$1 per 100 pounds. An 80,000-pound minimum applies on 7 per cent of the items, and the rates on these items vary from 65 to 75 cents.

The report then takes up the evidence submitted by the various interested communities. In conclusion the commission says:

The arguments advanced by the representative of the steamship lines and by some, but by no means all, of the representatives of the intermediate territory, urge that the policy of the commission hitherto consistently followed of

allowing the rail carriers to reduce their rates to water competitive points to a level lower than to intermediate points in order to permit the rail carriers to compete for the traffic with water carriers is against the public interest, because it tends to reduce the profits of the water carriers and the number of ships which would otherwise engage in the traffic.

The argument advanced by the water lines, if carried to its logical conclusion, means in effect that all traffic which may be hauled by water carriers should be reserved for their exclusive handling. The rail carriers can not maintain, under ordinary circumstances, a level of rates between the Atlantic and Pacific coasts, between the north Atlantic ports and ports on the south Atlantic or Gulf coast or between points on the Pacific coast that will be successful in securing any considerable amount of traffic in competition with water carriers without fourth section relief. We are of the opinion that the best interests of the public, of the transcontinental carriers, and of these intermountain cities in particular, will be served by a policy that permits the transcontinental carriers to share with the water lines in the traffic to and from the Pacific coast ports. The lower rates to the ports, however, when necessary, must not be lower than the competition of the boats makes necessary, and must be high enough to cover, and that by a safe margin, actual out of pocket costs of securing and handling the traffic. The shippers at the coast are thereby given the benefit of competing routes and competing markets of supply. The railroads are enabled to fill up their trains with traffic which, although not highly profitable, yields a revenue materially greater than the out of pocket costs of securing and handling the traffic, thereby adding to the net revenues of the carriers and to that extent lightening the transportation burden borne by other localities.

These transcontinental railroads can fairly expect such consideration as will permit them to continue to earn a reasonable return upon their property devoted to public use. If governmental control is so exercised as to prevent them from securing any considerable share of the business to and from the terminals and the largest possible return therefrom, such return must be derived from the other communities along their lines. It is perfectly clear that the Pacific coast cities have always paid lower rates than they would have paid were it not for the facilities they have enjoyed for bringing manufactured articles from the eastern manufacturing districts and for sending east the products of the coast states by water. It is also clear that the intermountain section of the country has paid and now pays rates for the transportation of these manufactured articles which are higher proportionately than is paid by the coast cities and probably higher than it would be necessary to maintain if the rates to the coast cities could be maintained at a level more nearly proportionate to the service given.

The situation, however, is one which these carriers can not control. The advantage enjoyed by these Pacific coast cities is in the long run a permanent advantage. A war of unparalleled extent, drawing into its service a great part of the shipping of the world, has for the time being deprived these cities of the advantage of any substantial degree of water service. The present conditions admittedly are not normal. It is very earnestly urged that these abnormal conditions, however, are temporary and that the long standing commercial conditions should not now be disturbed by any material increase in the coast rates. The present conditions may be temporary as measured by the period of years during which these transcontinental railways have been built, but it is not apparent that the conditions are temporary in that within any known period of time they will have passed away. Under the present circumstances the maintenance of these lower rates to coast points and higher rates to intermediate points is unduly preferential to the coast points and unduly prejudicial to intermediate points.

We are of opinion that all these rates in schedules B and C to the Pacific coast should be now realigned to accord with the long-and-short-haul rule of the fourth section. In this realignment regard should be had for the conditions now existing, but the conditions that have existed and may again exist should not be forgotten. The rates to all the interior states of Arizona, New Mexico, Nevada, Utah, Wyoming, Idaho, Colorado, and Montana, as well as to the Pacific coast states of California, Oregon, and Washington, should be adjusted at this time as fully as now can be determined, with especial reference to meeting all the requirements of sections 1, 3, and 4 of the act. The facts before us do not admit of such a finding as is sought by the carriers, the coast cities, and the eastern shippers, namely, that present conditions justify lower rates to the coast cities than to intermediate points. Neither do the facts altogether admit of such a finding as is sought by the representatives of the intermountain states, namely that all of these rates to the Pacific coast cities are in and of themselves reasonable and fully remunerative. Some of these rates from eastern territories to Pacific coast terminals are unreasonably low, judged by the standards of car-mile or ton-mile earnings that have been offered for comparison or the rates which we have established on like commodities on these and other lines in many cases. Some of the rates are not unreasonably low, and no relief should be granted as to the rates on such commodities even under conditions similar to those which existed the year following the opening of the canal. There are, as stated, other commodities upon which the rates as a whole are unreasonably low from some of the eastern territory, particularly from transcontinental groups A, B, C, and D, as evidenced by the car-mile and ton-mile earnings and other comparisons offered. The rates on many of these commodities to the coast cities in the past have been influenced by the rates afforded by the water lines. These water rates have been variable. Under these circumstances some of the rail rates to the coast points are in the nature of things subject to variation. The essential justification for lower rates to a more distant point than to an intermediate point is the existence at the more distant point of depressed rates, which the carrier is powerless to affect, and failure to meet which would prevent the carrier from participating in the traffic to the more distant point. That necessity as to some of these rates has existed in the past and may again exist. While there is good reason for a certain variation in the rates to the coast points there is no necessity or justification for such variation in rates to the points so far inland that they are not affected by combination on the coast. The rates to the greater part of this intermediate territory should not now be made to depend upon or vary with the coast rates. In *Railroad Commission of Nevada v. S. P. Co.*, and *City of Spokane v. N. P. Co.*, we proceeded in the light of the evidence then before us relating to the water competition to authorize the carriers to establish rates from Chicago, Pittsburgh, and New York to intermediate territory 7, 15, and 25 per cent, respectively, higher than the rates contemporaneously applied to the coast. The evidence then offered afforded no basis for concluding that it would ever be necessary for the rail carriers to establish such a low level of rates between the two coasts as they have sought authority to establish on many articles since the opening of the Panama Canal. The total tonnage of the schedule C articles that originated in transcontinental groups A and B and moved thence via rail or water to Pacific coast terminals in the calendar year 1913 was 961,768 tons. During the year following the opening of the Panama Canal the westbound tonnage secured by the water lines was 951,044 tons. The range of rates applied by the water lines shown in the preceding pages of this report, the applications and proof offered in their support by the rail lines during 1915 for authority to meet these rates,

and the volume of tonnage secured by the water lines evidence the compelling nature of the competition with which the railroads have been and may be again confronted as to many of the articles that originate in territory contiguous to the Atlantic seaboard. It is apparent from the facts at hand that this entire list of commodities, particularly those embraced within schedule B, should be scrutinized with care, and that all articles upon which the rates that can be secured from the eastern defined territories to the Pacific coast are not unreasonably low should be eliminated from schedule B and conform hereafter to the fourth section. All articles which do not originate on or near the Atlantic seaboard and upon which rates have not been particularly affected by water competition should also be eliminated from schedule B. All of the products of the soil, as well as canned goods from California, Washington, and Oregon, move to eastern territory via all-rail routes on rates that accord with the fourth section. The products of the soil of the central and eastern states, grain, vegetables, seeds, roots and fruits, and canned goods, should also be transported to markets on the Pacific coast under rates that are in accord with the fourth section.

As heretofore stated, there are now in the transcontinental tariffs a considerable number of items on which the rates from groups A to F, inclusive, to Pacific coast ports and intermediate points are in accord with the long-and-short-haul rule. These items we have referred to as schedule A items. The following items*, shown in the tariff of R. H. Countiss, agent, I. C. C. No. 1019, cover articles that either do not originate in large volume on the Atlantic seaboard, or if so, the rates on such articles do not appear to have been materially affected by water competition and these rates should be realigned to conform for the future to the long-and-short-haul rule.

The issues in this case and the evidence offered do not afford a foundation upon which we could properly make a finding as to the reasonableness of each of the rates which should be established on the items named either to the coast or to the intermediate points. This must be done in the first instance by the carriers with due regard for all of the commercial, transportation, and competitive conditions affecting this traffic. In those instances in which the rates that can be secured to the coast points are of sufficient volume to admit of their grading to intermediate points the commodity rates to intermediate points should be graded or grouped in such manner as the varying conditions in the territory served appear to warrant. The commodities not named upon which the rates to coast points are lower than to intermediate points constitute a very important list of articles upon which, under ordinary conditions, some fourth section relief should be granted. We think now that these rates to coast and interior should be realigned to conform with the long-and-short-haul rule. The realignment on these articles probably can not be maintained permanently. While there are many reasons to believe that ultimately some plan of grading the rates on these articles from eastern defined territories to the intermediate points should be effectuated, the issues in this case are not such as to permit us, if we desired to do so, to prescribe such a plan of grading. Furthermore, the time is not opportune. Nothing in this report must be construed as authorizing the carriers to increase any rates to intermediate points except points to which rates are now constructed by the addition of arbitraries or locals to the coast rates.

LESS-THAN-CARLOAD COMMODITY RATES WESTBOUND

There are 117 items of less-than-carload commodity rates in the schedule B list upon which the rates vary from \$1.60 to \$5. There are 90 of these items to which rates apply varying from \$1.60 to \$2.50. Sixty of them take a rate of

\$2 and 14 a rate of \$2.20. Fifty-four of these 74 items are articles which are classified as first class in western classification upon which the class rates to the Pacific coast are \$3 from the Missouri River and \$3.70 from New York. The commodity rate applied to the coast is from 54 to 73 per cent of the class rate on the same articles. Fourteen of the 74 items are classified as second class and the class rates to the coast are \$2.60 from the Missouri River and \$3.20 from New York. The commodity rates on these articles to the coast are, therefore, from 62½ to 84 per cent of the class rates.

There are 90 items in the schedule C list now moving on commodity rates of from \$1.50 to \$2. Two of these are classified as first class, 33 as second class, 29 as third class, and 26 as fourth class. The commodity rates are approximately 80 per cent of the class rates from the Missouri River to the Pacific coast. There are 19 second-class items in this schedule C taking a rate of \$1.75 to the Pacific coast. Where a rate can be secured which is higher than \$2.50 it would appear unlikely that such rates have been affected in any material degree by water competition and such articles should move either on class rates or on rates which accord with the long-and-short-haul rule. It is our opinion that relief should not be afforded on any article taking a commodity rate higher than \$2.50 even under normal conditions or such conditions as existed during the year following the opening of the Panama Canal.

We are of the opinion that the rates upon the other less-than-carload items in these lists are unreasonably low and have been depressed by reason of water competition. The rates on these articles should for the present be realigned to accord with the long-and-short-haul rule. If the carriers desire to continue commodity rates on these articles to the Pacific coast which are less than the class rates applicable thereto, the rates to intermediate points on the same articles should be constructed in such manner that they bear to the class rates to the intermediate points the same proportion as the readjusted commodity rates to the Pacific coast bear to the class rates to the coast. That is to say, if the commodity rate on any article from the Missouri River to the Pacific coast is readjusted and made, for example, 80 per cent of the class rate from the Missouri River to the Pacific coast, commodity rates should also be established from the Missouri River to intermediate points which are approximately 80 per cent of the class rates on the same articles from the Missouri River to these points.

EASTBOUND COMMODITY RATES

By Fourth Section Applications 9813, 10110, 10126, 10155, 10186, and 10189 the Southern Pacific Company-Atlantic Steamship lines and the Atchison, Topeka & Santa Fe in connection with the Mallory Steamship Company, sought and obtained authority from the commission to reduce the rates on barley, beans, canned goods, asphaltum, wine, and dried fruits from California ports, via rail-and-water lines through Galveston, Tex., to Atlantic seaboard ports, while maintaining higher rates from, to, and between intermediate points. These applications were made early in the year 1915, when the boat lines operating via the Panama Canal were actively engaged in building up business via their routes and were in fact transporting a very large percentage of the tonnage of these commodities at rates from 10 to 40 cents lower than the rates which the rail-and-water lines then sought to establish. The order issued in Reopening Fourth Section Applications, rescinded, effective September 1, 1916, the fourth section orders issued responsive to the fourth section applications above named. As before stated, the schedules filed with the commission effective September 1, naming increased rates on these commodities, were suspended until December 30, 1916, and subsequently canceled. The schedules which became effective March 1, 1917, had the

*Here follows a list of about 110 commodities.

effect of increasing the rates on these commodities by 10 cents per 100 pounds. Although it is clearly apparent that there is no necessity on account of existing competition by water for the maintenance of lower rates from the ports on these commodities than the rates from and to intermediate points, the carriers seek authority to continue these rates that they may be prepared for the water competition when it returns. Dealers in these commodities, both on the Pacific coast and in the eastern territory, support the application of the carriers. There was very little offered in evidence by carriers or interveners respecting the level of rates which might reasonably be applied on these commodities. We can see now no justification for the continued maintenance of lower rates on any of these commodities from the Pacific ports to the Atlantic seaboard than are applied from, to, or between intermediate points.

We have considered carefully all of the facts urged by the carriers in support of their applications for authority to continue lower rates to the coast than to intermediate points, the statements made by representatives of shippers and receivers of freight, at the coast cities in the eastern shipping territory, and in the intermountain section. We have stated that the rates, both eastbound and westbound, should be revised at this time in such manner as to bring them into accord with the long-and-short-haul rule. When the water competition will return in force and in controlling amount between the two coasts is uncertain. We are of opinion that the carload rates on all of the commodities in schedules B and C shown in the present transcontinental tariffs, with the exception of those we have above enumerated by item number and caption, have been affected by water competition to such extent as to justify some fourth section relief under normal conditions. We are of opinion that the less-than-carload commodity rates which are less than \$2.50 per 100 lb. have been brought about as the effect of water competition and that some fourth section relief is justified on these commodities under normal conditions. When the water competition again becomes sufficiently controlling in the judgment of the carriers to necessitate the reduction of the rates to the coast cities to a lower level than can reasonably be applied at intermediate points, the carriers may bring the matter to our attention for such relief as the circumstances may justify. Competent proof must be submitted in connection with such applications of a fairly regular water service between the two coasts; the adaptability of the traffic to water competition; principal points of origin of the traffic; range of rates afforded by the water lines; principal points of consumption; and the ports upon the two seaboard at which the water carriers receive and deliver freight.

We are not unmindful of the claims of the carriers concerning the disadvantage under which they labor in being unable to reduce their rates promptly when necessitated by the competition of the water carriers. One of the primary purposes of the act to regulate commerce was to preserve competition between carriers. Competition involves a striving between or among two or more persons or organizations for the same object. There can exist no even-handed striving between two persons when one is bound and the other is free, and the maximum of real and effective competition can not exist between these boat lines and rail lines when one side is free promptly to make any rate it desires, while the other is so restricted by statutory requirement as to be unable to take the necessary steps for the prompt protection of its business. We are, however, also mindful that one of the primary purposes of building the Panama Canal was to assist in the development and maintenance of an active, efficient, and profitable water service between the two coasts. It is not our purpose to put upon these carriers any undue hardship in their attempt to meet such competition as the future holds for them. Such fourth section applications as they may find it necessary to make with reference to this traffic will be disposed of with such celerity as the circumstances may permit.

Neither is it our purpose to permit the maintenance of rates to or from Pacific coast points at a level that will render this service unattractive to the boat lines.

An order will be entered denying the authority sought by these applications to continue lower rates on commodities to more distant than to intermediate points, and rescinding all previous orders entered in regard thereto.

DISSENTING OPINION

Commissioner Harlan, in a dissenting opinion, said in part; that the intermountain territory in the past has labored under unnecessary rate disadvantages sufficiently appears from the commission's reports in various proceedings in which those rates were under consideration; and in so far as the findings of the majority in this proceeding require the correction of any unlawful inequalities against that territory in the present rate adjustments of the defendant carriers, I fully concur.

The readjustment now required by the majority is to continue, as their report indicates, only during the remainder of the war and until commerce again moves through the canal. If the resumption of the water traffic may reasonably be anticipated in the near future, the disruption, coming nearly three years after the war commenced, of the present relations between the Pacific coast and the intermountain territory would seem to be highly unnecessary and undesirable. But even if the war conditions should continue and the resumption of commerce through the canal should not take place for two or three years longer, that would be but a moment of time compared with the period during which the present rate relationship has existed, and compared with the indefinite future during which, so far as we may now see, that general relationship must continue, because of the fixed and lasting character of the controlling natural conditions that we have been considering. The temporary interruption of the present relationship either for a few months or for several years, if the war conditions continue so long, can contribute nothing of substantial or continuing value to the prosperity of the intermountain territory. Its only effect will be to put the two territories temporarily out of line with what must necessarily be the course of their future relationship. During the period of the interruption the merchants of the intermountain cities may have a larger business than they otherwise would, while the merchants of the coast cities may have to pay materially higher rates on their traffic. These advantages, however, will be but temporary; they will not be constructively helpful to the intermountain territory or be of real aid in its future upbuilding; and in the meanwhile the merchants of both the competing territories will be left in perturbation and doubt respecting the contracts and commercial engagements that they may safely make while the purely provisional rate adjustment required under the majority report is in effect.

In my judgment rates and trade relations, based on conditions so permanent and enduring as the coast to coast water route through the Panama Canal, ought to be stable and secure against needless fluctuations, and I see no warrant either in the law or upon the record for now throwing both into sudden and violent confusion because of purely abnormal and temporary conditions.

RELIEVING CAR SHORTAGE IN SPAIN.—Hereafter the Spanish consignee will take his freight within five days or else his goods will be sold at auction. The Spanish government has issued more stringent orders regulating the transportation of merchandise and the better utilization of rolling stock. As platforms and freight depots are overcharged with merchandise, the work of unloading is frequently interrupted, and in order to relieve this congestion the railroad companies have been authorized to sell at auction all the merchandise not withdrawn by the consignees within five days from the date of its arrival at destination.

ELECTRIC INTERLOCKING INSTALLED AT A BUSY CROSSING

The new electric interlocking plant at Corwith (Chicago), Ill., about six miles from the Chicago union station, will eliminate the necessity for stopping about 45 through passenger trains each day on the main line of the Chicago & Alton and the Atchison, Topeka & Santa Fe, and in addition will greatly facilitate the numerous through freight and local switching movements at this point. The plant is located at the crossing of the Illinois Northern with the parallel lines of the Santa Fe and the Alton, and includes, in addition to the double crossing, junctions and wyes on both tracks. This crossing is in the industrial district of the city's southwest side, the Illinois & Michican canal being situated between the Santa Fe and the Alton, and the drainage canal just north of the Santa Fe. There are large terminal and classification yards in all directions and switching moves between these yards are being made over the crossing almost continuously during certain portions of the day. Four switching engines are always in service within the limits of the interlocking and at times 19 trains or engines have been counted waiting to make a move through the plant.

On the Chicago & Alton, the Glenn yard, where all interchange freight from foreign roads is received, is located about three miles west of Corwith, and at Brighton Park, about one-half mile east of the new plant, there is a large engine terminal and yard. The Santa Fe's Corwith yard, its principal freight terminal in the Chicago district, lies immediately south of the double crossing and the Thirty-third street yard of the Illinois Northern is immediately north. While at the crossing the Illinois Northern has only a

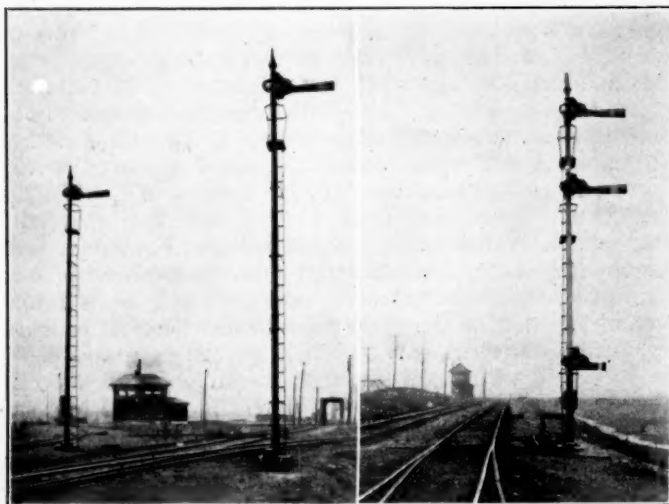
& Alton, the Atchison, Topeka & Santa Fe, and the Chicago & Western Indiana.

This double crossing was formerly protected by a mechanical interlocking plant, which was taken out of service in 1910. Since that time the Chicago & Alton has maintained one switch tender at this point, the remainder of the switch-throwing being done by train crews. The decision to build the new plant was made on the double ground of providing desirable protection at this busy point and facilitating train movements.

The tower, as shown in the illustration, is a two-story brick structure on concrete foundation with slate roof. A small one-story addition on one end houses the storage batteries. The ground floor of the main portion of the tower is divided into two rooms, one for the hot water heater and maintainer's quarters, and the other for the relay cabi-



Signal Tower, Corwith, Illinois



Illinois Northern and the Santa Fe Wye

Chicago & Alton Three-Arm Signal

single track and the Santa Fe and Alton each two tracks, the Santa Fe expands to three tracks just east of the plant and to five tracks just west, while the Alton has four tracks on each side of the crossing. The tower, which adjoins the Alton main line, is placed back from the nearest track a sufficient distance to allow the addition of a third track if this becomes necessary in the future. The plant is very much spread out on account of including all of the junctions, there being a distance of about 3,000 ft. from the tower to a five-track bridge on the Santa Fe west of the crossing, about 1¼ miles to two outlying switch locks on the Santa Fe to the west and about 1½ miles to the Santa Fe distant signal on the west, which is also the home signal for the interlocking plant at Nerska, used jointly by the Chicago

net and power unit. The second floor of the tower is occupied entirely by the operator's room.

The normal supply of power is obtained at 220 volts a.c. from an adjacent commercial line which supplies a motor-generator set, used normally for charging the storage batteries, and a small transformer with 75-volt and 10-volt taps for locks and lever lights. The emergency power supply is furnished by a Fairbanks-Morse d.c. dynamo, direct-connected to a gas engine. The battery installation consists of 57 cells of 200-a.h. capacity Electric Storage Battery, chloride accumulator type, for switch and derail machines, and high signals, and two sets of five each of 200-a.h. battery of the same type for lever lights, locks and repeating relays. This battery is supported on a wooden rack which is mortised and pinned together without the use of nails.

The interlocking machine is of the G.R.S. unit-lever, model 2 type with 78 working levers in a 104-lever frame. The additional room is provided for additions to the plant that would be necessary if a third track were to be added on the Chicago & Alton. The machine has lever lights, which are lighted when a track circuit is occupied.

A marked difference is noticeable between the signaling standards on the two principal roads in this plant. The Santa Fe uses a one-arm signal with 10 to 12 possible routes, while the Chicago & Alton has three-arm signals for three routes. No distant signals are provided on the Illinois Northern as only switching movements are made over that line. As the normal-danger system is used on the Chicago & Alton west of this plant, a special control circuit was necessary for the first automatic signal to the west. This circuit operates as follows: When a westbound train enters the annunciator circuit, the control of the first two-position automatic signal west of Corwith is cleared by the contact

on the back point of the annunciator, and holds clear on the back points of the track relays between the home signal and the advance signal after the train passes the home signal.

All signals are electrically lighted and a pilot light located over the interlocking machine in the tower is connected in each lighting circuit so that if any one light fails, an immediate indication will be provided. This system has been in service more than a year at another point on the Chicago & Alton, and has given good satisfaction.

Approach, route and sectional locking are provided on both the Santa Fe and the Alton, with annunciators to warn the towerman of the approach of trains. There are no annunciators or track circuit locking on the Illinois Northern. G. R. S. push releases are used for track circuits, and screw releases for signals and switch locks. The operation of the electric switch lock requires the co-operation of the operators at Corwith and Nerska.

All track circuits are d.c. supplied with energy from BSCO batteries located in battery chutes. The battery for operating distant signals is of the same type, located in wells. All relays are of G.R.S. manufacture. Switch machines are G.R.S. model 2, and all signals are G.R.S. 2A upper-quadrant. Okonite insulated wire was used throughout.

This plant was installed by the General Railway Signal Company, under contract with the Chicago & Alton, and will be operated by the Alton. We are indebted for courtesies in securing the above information to G. W. Hulsizer, superintendent of telegraph and signal engineer, and S. U. Rhymer, general signal inspector of the Alton.

LESSONS FROM THE FREIGHT CONGESTION

By J. E. Campbell

Freight Agent, Pittsburgh & Lake Erie, Glassport, Pa.

The congestion which existed throughout the eastern states during the first three months of the present year, which continues to exist in some quarters and which undoubtedly will recur from time to time for some months to come, can only be solved by the exercise of common sense, good judgment and determination. It is not wholly a question of additional facilities, more cars, more engines and greater terminals. It is rather a question of utilizing present facilities to their full capacity and securing the greatest possible results from the existing transportation plant.

During the past winter many traffic men explained the congestion which existed as far west as the Mississippi and south to the Ohio river and Virginia gateways by the rush of export business and the unprecedented total volume of business the railroads were handling. This was true only in part. The export problem had been solved, in large measure, early in 1916 by the permit system. Furthermore the volume of business on some of the worst congested roads was not as heavy as was handled one year previous when there was no congestion. One of the worst things with which the railroads had to contend was a demoralized labor situation. The injection of many new and inexperienced men into all departments and the general restlessness which has prevailed among all classes of labor everywhere was the main factor in the breaking down of many roads. Throughout 1916 the railroads lost many of their old and best men, for industrial concerns did not hesitate to bid a few dollars per month or a few cents per day more than the railroads were paying and thus take many of their employees.

Last winter furnished a good object lesson of what can be done when the effort is made. After dragging along for weeks under demoralized conditions different lines suddenly made the effort and found that order could be restored much quicker than they imagined. The New Haven did some

good work in this direction early in the winter and conditions on that line were improved in an incredibly short time.

The same means used to relieve congestions will, in most cases, prevent them. The first step in applying the remedy is a general stock taking. A careful survey should be made of conditions as they exist upon the road, the situation at different points being studied and analyzed carefully, the relations with connections examined and peculiar conditions at different points that complicate operations ascertained and overcome. The proper officers should at all times have a full and complete record of every load on the line, showing the destinations for local roads and the route for loads going to connections. There should also be full and complete reports showing the number and kind of all empties. These reports should be as simple as possible so as not to be burdensome in making or in use.

With a thorough diagnosis of the situation all over the road it is possible to apply the best remedy. Congestions on most lines are, as a rule, a result of terminal conditions. Such conditions are usually accompanied by a demoralization of the operating forces in the yard. The first step is to restore some measure of order at such places and to get the work organized again with some system. Tracks must be checked carefully and switched properly; all loads for team tracks and industries must be placed and delivered promptly; empty cars should be moved out of congested districts promptly, even though it may be at a sacrifice of new business sometimes, so that it will not be necessary to handle them repeatedly in switching loaded cars; billing should be secured for all "No Bill Cars" for these derelicts are one of the most troublesome and expensive problems in any yard or at any terminal or connection. "Hold" cars should be segregated so as not to entail undue handling with live loads. Outbound loads should be properly and carefully classified and moved at the first possible moment. Classification tracks should be maintained inviolate and not used for storing unswitched trains and "hold" cars. Team, industrial, "hold" and storage tracks should be switched regularly and according to a fixed schedule. There must be co-operation between day and night yard forces in order that any advantage gained during the day may not be lost at night. Shop cars should be placed on shop tracks or moved to shops regularly and without delay.

When order and system have once been restored in terminals and yards a long step has been taken towards improving conditions over the entire line. There are but few instances in which order and system cannot be brought about in a very short time when the necessary effort is made. It is possible to congest a yard when it does not contain more than half the cars its capacity calls for, or to bring business to a standstill when only a small percentage of the maximum traffic that might be taken care of is being handled through a terminal. The details of this work can best be studied by the man on the ground. Yardmasters, trainmasters and other operating officials should spend much time on the scene of action. The details of correspondence and office work should be left, in a large measure, in the hands of their clerks and subordinates. Too many officers are filling the places of clerks at their desks. The best results will be attained when the responsibility is passed down the line to the lowest ranks and each officer holds his subordinates to strict account for results. Unfortunately the reverse of this has too often been true in railroad organizations and each employee has been passing the responsibility for bad conditions up to his superior instead of assuming his own share. When each employee begins to feel that he has a responsibility there can be no question but what greater results will be secured.

Diplomacy can be made an important factor in improving conditions on many roads. There is opportunity for its use between the road and the public; between the various roads

and their connections, especially at junction points; between the several departments and between the officers and their subordinates. There never has been a time when the public has been so ready to co-operate with the railroads; particularly is this true with the more important shippers. Consignees are very ready to speed up their unloading and release loaded cars promptly when placed upon their sidings. Agents and yardmasters will have very little trouble in this direction if they handle their patrons judiciously. The shipping public is fully conscious of the fact that any effort the railroads make to better conditions, to increase the car supply, or give more prompt service is to the benefit of all patrons of the roads. Shippers are also aware that the efforts the railroads may make to take care of the business of the country will be backed up by the Interstate Commerce Commission and the Federal Government. A willingness has been found on the part of shippers to load cars heavier, observe car service rules relative to loading foreign cars, unload and release cars promptly when placed in their plants, furnish advance information as to their shipments to enable the railroads to provide proper equipment and load their cars so as to enable the roads to observe regular schedules. The few shippers who have not co-operated along these lines are fit subjects for diplomacy and if they are approached in the right manner in most cases can be lined up to do their part.

There is special need of co-operation and diplomacy between connections at junction points. There can be no greater factor in the successful operation of the various roads than a free interchange at junction points. Here is where every yardmaster, agent, clerk, train crew, car inspector, as well as officer, can do much to help. There should be a policy of give and take. Each road should meet its connections half way and should accept a car for every one it can deliver. In fact, oftentimes it would be justified in accepting two cars for each one delivered provided such action would help to clear up the general situation. The cars coming to such a road must eventually be accepted and moved to destination, and the sooner this is done the sooner conditions as a whole will mend and the better will the public be served. At junction points even the car inspector can do much to improve conditions. Co-operation between inspectors of connecting lines will often work wonders. They can unite in making light repairs, in issuing defect cards for cars not carrying penalty defects, and in keeping many cars out of the shops and off repair tracks, thus reducing congestion. Yardmasters and their crews should learn the lesson that in helping their connections they are also helping themselves.

The embargo has played an important part in the operation of most of the roads during the past year. It is an instrumentality of great good at times, but one which should not be abused. It is to be feared that the embargo has been used many times when what was needed was an effort and determination to move business and overcome trying obstacles. The embargo should not be used to stop the regular and natural flow of business. It should not be used to interfere with the movement of cars and shipments which the consignee is waiting to receive and accept at once on their arrival at destination. Under such circumstances what is needed is extra effort to meet the unusual conditions and get the business through to destination.

As stated above the conditions that have existed on our railroads were largely the result of a demoralized labor situation. There long has been the need of some plan on the part of the American railroads to bring out the best efforts of all employees. During the past year many industrial concerns have adopted the bonus system to increase production and stimulate their employees to their full capabilities. Some such system is needed on our railroads to reach every de-

partment. A system of this sort does not necessarily mean the payment of large sums of money to attain results, but rather the recognition and encouragement of faithful employees. More sure prospects of promotion, the consciousness that their efforts will in some manner come to the notice of their superior officers, special vacations sometimes, in fact, a multitude of things might be done in this direction that would be as effectual as the payment of cash bonuses have been in the industries.

RAILROAD TRAINMEN AS MISSIONARIES OF PUBLIC OPINION

In a circular recently issued by T. J. Foley, general manager of the Illinois Central, trainmen and enginemen are urged to use such opportunities as present themselves to set forth the railroad side of the transportation question. The extensive possibilities of enlisting these employees as proponents of railway interests in their intercourse with the public, led Mr. Foley to relate the following incident as an example of what can be done:

"One of our conductors discussed the railway situation with a prominent farmer. The conductor knew all about the Illinois Central property and management. He impressed the farmer, who repeated the substance of what the conductor had said to a local merchant. Our superintendent called on the merchant in the usual course of business and found him in the midst of a heated conversation with a politician. The merchant was trying to impress upon the politician that a broad policy toward the railroads benefited everybody, and that a narrow policy injured everybody. The politician left the merchant and the superintendent together. The merchant explained that he had gotten his inspiration and his facts from the farmer. The alert superintendent made it a point to get acquainted with the farmer and learned that he had formerly been very antagonistic to the railroads and had been changed completely by the interview which he had had with the conductor."

The experience described convinced Mr. Foley of the advantages of inaugurating a series of educational circulars to keep trainmen posted on railway affairs, and especially those of his own company. He said:

"The thought occurred to me that perhaps the management was to blame for not giving trainmen and enginemen something to talk about. We would like for them to do a good deal of talking, for we recognize the fact that they are both able and willing to do it. Therefore, I have concluded to give them little bits of information about our company from time to time, and I am going to ask that each trainman and each engineman consider that he has been constituted a committee of one to talk about the Illinois Central to the public. If each should talk with only two or three persons each month about the needs of the railroads, it would do a great deal of good."

In the first circular, introducing the plan, Mr. Foley proceeded to put his scheme into effect by presenting in concise form some essential facts concerning the Illinois Central. Among the points covered are the mileage and location of the line, its capital stock, the number of stockholders, the amount of equipment owned, the number of trains operated, the number of employees and the total of their wages, the company's consumption of coal and the cost of fuel, recent purchases of cars and locomotives and increases in prices in the past two years, operating revenues and expenses for the past six months as well as taxes, interest and dividend requirements; and the need of the company for larger terminals and more equipment to take care of constantly increasing business.

Car Conservation Meeting at Chicago

Instructive Discussion of Details of the Far-Reaching Freight Car Problems Now Pressing for Solution

A CAR conservation luncheon was held at the Hotel La Salle, Chicago, on July 17, at which representatives of the railroads and the shippers presented their points of view on available means of increasing transportation efficiency to the end that the present crisis may be passed without serious injury to the country. F. B. Montgomery, manager of the traffic department of the International Harvester Company, Chicago, acted as toastmaster.

BOTH SIDES OF THE CAR SHORTAGE PROBLEM

H. C. Barlow, traffic director of the Chicago Association of Commerce and advisor to the new Division on Car Service of the Interstate Commerce Commission, spoke on "Both Sides of the Car Shortage Problem." He appealed to railroad men and shippers alike to forget their former differences and join in an earnest co-operative effort to pull the country through its most serious transportation crisis. He said: "It has been said the transportation systems have broken down. That's not true as I see it now. We have flooded them, that's all."

He addressed his remarks first to the carriers and then to the shippers. To the former he advised against further slowing up of freight schedules. He said, in part:

"I have heard it estimated that the lengthening of the schedules that took place about 1911 consumes about 5,000 car days. I know and appreciate your argument for heavier trains but I ask, under present conditions, if that is true economy?"

"A great and successful effort is being put forth to persuade the shippers to buy and load heavier. Are you loading and unloading your companies' coal, material and supplies with the same promptness and despatch you properly require at the hands of the shippers? If not, why not?"

"Under M. C. B. rules a surprisingly large number of cars are seemingly put out of service, an unusual length of time awaiting proper parts with which to make repairs, that is, for just the right brake beam, etc. In the present emergency cannot this be avoided by putting on a safe brake beam, thereby getting the car back into service at once?"

"Referring to full capacity car loading and ordering a survey of the shipments of one of the largest lumber concerns in the South discloses the following for the four months ending April 30, 1917. It shipped 7.72 per cent more cars and 23 per cent more lumber; during the month of May it shipped 27 per cent more cars and 53.5 per cent more lumber. Taking the five months ending May 31, 1917, these mills shipped 12 per cent more cars and 30 per cent more lumber. The average loadings exceeded 60,000 lb., in spite of the fact that they have loaded a large number of stock cars, many of which were of the double deck variety. This is certainly a most excellent showing."

"The president of this company, however, writes: 'Strange as it may seem, we have just received an inquiry from a certain large railroad in which it asks our people to quote prices on three or four minimum cars. The sales department has replied that in view of existing conditions it could not quote on minimum cars but the prices attached were for maximum cars.'

"I know this to be true in the matter of other materials for account of the railroads. Many small lots are ordered because the distribution is to two or more supply shops. I respectfully ask the railway gentlemen, 'Why not double load these cars as the shippers are doing in many instances?'"

To the shippers he put the following pointed questions to impress upon them the importance of action at this time:

"Do you want to help win the war for our country? Do you desire to add very greatly to the amount of equipment in the country that you may be sure of having more cars? Do you desire to increase the terminal facilities of the country, thereby avoiding blockades and embargoes? Do you really want to do these things without expense; in fact, save money by doing it?"

It is the duty of shippers desiring these things, Mr. Barlow said, to conform to the following rules:

1. Unload every car at once. Don't wait for the free time.
2. Load every car promptly. Don't wait for, nor use all the free time.
3. Load all cars to their visible or carrying capacity.

Mr. Barlow emphasized the distinct advantages accruing from an adherence to these rules. He said:

"Remember it costs you more to handle two cars at the plant than one. It costs no more to sell 30 or 40 tons than it does 15 or 20 tons. Big loading cuts down expense at the plant and reduces selling cost. Try it, and in a while you will be surprised at the result. Do it now, it is the only way to save a bad situation. Let's not change the minimum in the tariffs, but ignore them in this great emergency."

He described in considerable detail the functions of the Commission on Car Service of the American Railway Association, the new Division on Car Service of the Interstate Commerce Commission, and the various subcommittees of the railroads and the National Industrial Traffic League recently created to assist in regulating the car supply. He urged the utmost co-operation between the carriers and the shippers to the end that the war may be won. In this regard, he said:

"The Interstate Commerce Commission has, figuratively speaking, placed one hand of the shippers and carriers together and in the other hand the traces and said: 'Now pull together and when you don't quite agree, come to us, but don't stop pulling the right way. Remember when you may be tempted to quit, the very safety of our country may be jeopardized.'

"In full realization of the tremendous responsibility resting upon us I urge shippers' and carriers' local committees to meet together often, to discuss every question fairly, and to forget past differences. Let's fight Germany during the war and Germany only. . . . The plan could not be devised better, the working out of it rests largely in your hands for in the very nature of things it could rest in great measure nowhere else. The successful outcome is fraught with tremendous results. Now every man to his task with a will and a cheer."

ADDRESS BY SAMUEL O. DUNN

Samuel O. Dunn, editor of the *Railway Age Gazette*, emphasized particularly that the transportation crisis now confronting the country threatens to become more acute with the increasing movement of troops and military supplies for the government. On June 1, the net shortage of freight cars reported by the American Railway Association was 105,000. Although this was a decrease of 30 per cent under the shortage reported on May 1, it far exceeds the largest previous shortage reported for the same months, which was 8,000 cars in June, 1907.

Although it must be admitted that railroad facilities are inadequate, it is not a fact that the carriers are failing to perform the work which should reasonably be expected from

them. On the contrary, statistics show that the railways are handling more traffic by far than ever before, indicating that the real reason for a car shortage is the tremendously increased business offered them since the inception of the war. In the fiscal year 1916, they hauled 343,000,000,000 ton-miles of freight, an increase of 66,000,000,000 over the previous year, and 42,000,000,000 over any other year on record. The gross freight earnings for the first four months of 1917 were \$853,000,000 as against \$790,000,000 in the same period of 1916, or an increase of eight per cent. As rates have not increased, these figures truly reflect the increase in freight handled. Statistics for freight traffic moved by American railroads in April, 1917, show an increase of 16 per cent over the same month in 1916. This is a remarkable achievement in the face of a net increase of only 46 locomotives and 11,000 freight cars. Factors contributing to the results attained were an increase in the average trainload from 637 tons in April, 1916, to 703 tons in 1917, or 14.5 per cent, and an increase in the average carload from 24 tons to 26.4 tons, or 10 per cent.

In the fall when the heavy burden of military traffic begins to be felt, the problems of railroads and shippers will become even more complex. What has happened abroad is indicative of what will happen here. In England there has been an increase in freight business of 50 per cent since the beginning of the war, and on the French railroads an increase of 100 per cent. Unless superhuman efforts are made by all concerned, considerable freight business will not be moved at all.

At no time previously have shippers shown a greater disposition to co-operate with the railroads for transportation efficiency, and at no time has such a co-operative spirit been so vitally necessary as now. It is highly essential that those who are fitted by long experience in the actual operation of our carriers be permitted to direct the work of solving the pressing problems confronting the railroads. Five men pre-eminent in the transportation world have been selected to control the operation of the nation's railroads as a unit. They represent the best brains and ability in their sphere, in the estimation of railroad men, and will do the work assigned to them as efficiently as is humanly possible, if they are not interfered with by the government.

ADDRESS BY J. F. PORTERFIELD

J. F. Porterfield, general superintendent of transportation of the Illinois Central, also laid considerable stress on the importance of frequent conferences between the shippers and the railroads in the interests of car conservation. He outlined the work already done in this direction by the Illinois Central, which has effected an increase in average car mileage per day from 26 to 44, an increase in the average carload from 25 to 27 tons, and a decrease of bad order cars in two years from 9.6 per cent to 5.1 per cent. He stated that the Railroads' War Board estimated that by heavier loading and quicker repairs the railroads could further increase car efficiency equal to adding 779,000 cars to the available equipment. An additional saving, equal to the present car shortage, can be made, he said, by eliminating the delay incident to holding cars for reconsignment and surrender of bills of lading. In this regard, he said:

"After years of effort the railroads have finally agreed on filing tariffs covering uniform reconsigning rules and charges, and, while these rules will not prohibit reconsigning, they make a reconsigning charge of \$5 where the movement of the car is interrupted, and a nominal charge of \$2 where the car is reconsigned without being delayed or diverted from the current of traffic. It is thought the \$3 difference in the charge will greatly reduce reconsigning in hold-yards and increase the placing of reconsigning instructions with the railroads sufficiently in advance of the arrival of cars to effect the reconsignment without diverting cars from the current of traffic

to hold tracks. It is probable that the National Industrial Traffic League and the Committee on National Defense of the American Railway Association can prevail upon the Interstate Commerce Commission to permit these reconsigning tariffs, now under suspension, to go into effect at once.

"The practice of billing freight to 'shipper's order, notify' now and always a source of serious loss in car efficiency, is causing additional car delay owing to the present banking system requiring the handling of bills of lading through several banks, resulting in a large number of cars being delayed awaiting surrender of bills of lading; although, of course, the most serious delay is caused by diverting cars from the current of traffic to hold-yards while the party named in the billing is receiving notice, obtaining and surrendering bill of lading. An order should be issued by the commissions having authority, to prohibit this practice during the present car shortage.

"To increase cars available for hauling coal authority should be given by the Interstate Commerce Commission and the Illinois Public Utilities Commission, as recommended by the Illinois State Council of Defense, to permit the railroads, during the present emergency, to reduce the free time for unloading coal from 48 to 24 hours."

ADDRESSES BY MESSRS. FORSYTHE AND BODE

D. I. Forsythe, vice-chairman of the Chicago committee of the Commission on Car Service, outlined the purpose of his committee and others organized in other large traffic centers of the country, and invited the co-operation of shippers in working out the problem of increasing the available supply of cars.

W. S. Bode, vice-president of Reid, Murdock & Co., Chicago, told how at the last annual meeting of the National Wholesale Grocers' Association a War Service Railroad committee had been appointed, with him as chairman, to investigate means of assisting the carriers in conserving cars. Among the recommendations the committee had made are the revision of prices of certain lines of goods now bought and sold in so-called carload units, greatly below the maximum lading, to conform more nearly with car capacity; and more complete co-operation between the merchant and the railroad especially in the giving of prompt information concerning unusual delays, particularly to carload shipments, either in transit or in placing after arrival, or in moving from the shipping track after loading. Some members of the association have submitted the following suggestions to the committee: (1) The elimination of the present delay to sight draft shipments by giving a bond of indemnity to the railroads in advance, thereby insuring the immediate delivery of the car on arrival. (2) Allowance of a slight difference in rates between a maximum loaded car and a minimum loaded car. (Such a reduction is now allowed on all maximum loads of canned goods and dried fruit shipped from Pacific coast points.) (3) The abandonment of all classifications for food products and the adoption of one or at the most two—one classification for raw materials and the other for manufactured products. This would result in an enormous saving to the railroads in the cost of clerk hire, checkers, billers, abstractors and revisors. All bills of lading would have but one entry, viz., food products, giving the number of cases or bags, etc., and the weight.

1,500 MILES VIA TRUCK.—A large tire manufacturer has recently inaugurated the policy of shipping its product all the way from Akron, O., to Boston, Mass., by motor truck. The trucks take about four days to make the trip of 1,500 miles, and are fitted with a sleeping compartment to be used by the two drivers who take turns at the wheel. On the return trip the trucks are loaded with cotton fabrics from mills in Connecticut. The big trucks carry a sign reading "Akron-Boston Express."—*Wall Street Journal*.

THE MECHANICS OF THE CHILLED IRON WHEEL*

Chilled iron possesses inherent qualities which are not found in other metals and its principal characteristics are its ability to carry any load that can be supported by the steel rail without crushing or flowing.

The mechanics of the chilled wheel have never been investigated except in a very superficial way. The fundamental properties of chilled iron, such as specific gravity, modulus of elasticity for varying tensile strengths, action under repeated stresses, relation of operating conditions to temperature stresses, etc., are not established. If the properties of chilled iron were fully understood and properly used in the wheel, a large return on the meager expenditure for investigation would flow in upon the manufacturers in the way of increased profits and to the railroads in the way of reduced costs.

The loads carried by the wheels and rails have been constantly increasing and the question now arises—are we nearing the limit for wheel loads? If so, what is the determining factor? What margin still remains for further increases, in bearing power of the metal of wheel and rail, in flange strength, in web and hub. These are the questions we propose to answer by considering each part of the wheel separately.

Bearing Power.—The bearing power of iron or steel is largely controlled by the carbon content and naturally since the tread of the cast iron wheel contains $3\frac{1}{2}$ per cent of carbon it has a much greater bearing power than the rail which contains less than one per cent of carbon. A 33-in. chilled iron wheel will not perceptibly flatten under a load of 250,000 lb., which is 8 or 10 times the present maximum wheel load. Chilled iron wheels are in common use carrying 100,000 lb. or more under large cranes, unloading bridges, transfer tables, hydraulic locks, etc. To carry these loads wide special flat-top rails are necessary.

The ordinary railroad rail with a 12-in. top radius will develop a permanent set when the indentation of the wheel into the rail amounts to .007 in. If we assume that the maximum load carried in rapidly moving service should not cause when at rest an indentation greater than one-half this amount, the limiting loads from the rail standpoint are readily calculated by the formula $L = 1,500,000 d \sqrt{D}$ in which L equals load, d equals indentation into the rail and D equals diameter of the wheels. In this formula the pressure per square inch over the area of contact between wheel and rail is taken at 100,000 lb. per sq. inch. The limiting loads for various diameters of wheels are:

42 in. wheels.....	34,000 lb.	33 in. wheels.....	30,200 lb.
36 in. wheels.....	31,500 lb.	30 in. wheels.....	28,800 lb.

As far as the bearing power of chilled iron is concerned there is no indication of nearing the wheel load limit.

The Flange.—The pressure which the flange must resist in guiding the truck around curves is equal to $\frac{3}{4}$ the wheel load, provided the track is perfect and the cars are in good condition. The pressure is not influenced by the degree of curve, velocity, centrifugal force or obliquity of traction, but an allowance must be made for impacts originating from irregularities in track and locked side bearings and center plates, which added to the curve pressure will make the total maximum lateral pressure against the flange $1\frac{1}{2}$ times the wheel load, or 18,000 lb. for the 30-ton car and 46,500 lb. for the 85-ton car.

It is unreasonable to suppose that a flange designed for an 18,000 lb. pressure will have the same factor of safety for 46,500 lb. pressure, in fact the thickness of flange was de-

veloped when flange pressure did not exceed 8,000 lb. It is just as necessary to increase the flange section as to increase all other sections of the wheel, when increased duty is imposed. Notwithstanding the fact that the Master Car Builders' Association in its latest report stated that no increased flange width was necessary, this matter is by no means settled as far as other associations are concerned, and a movement is again started to determine whether the hundreds of thousands of flanges that are now in use (which are wider than the present M. C. B. standard flange) are not entirely in harmony with present track standards.

When this question is answered, we will have an opportunity to present to the Master Car Builders' Association a flange with a factor of safety proportional to the load carried, which is not a difficult proposition and which from an engineering standpoint is demanded.

Stresses Within the Plate or Web.—The University of Illinois has undertaken a thorough analysis of the properties of chilled iron and of the stresses within the wheel originating from all conditions that can arise in service as far as they can be duplicated in the laboratory. These items include specific gravity, co-efficient of expansion by heat, modulus of elasticity, tensile and compressive strengths, stresses in the wheel originating from pressing on the axle, from vertical load, from side pressure on the flange, and from difference in temperature between the tread and the plate. Tests are also to be made to discover the probable difference in temperature between the tread and the plate for continuous application of various brake shoe pressures at various velocities. An indication of the magnitude of these stresses already has been determined as follows:

From pressing on an axle having a 7-in. wheel fit at 60-tons' pressure, 18,000 lb. compression per square inch is developed in the single plate; the greatest tensile stress is in the hub. If the machine work is fairly well done these stresses are symmetrical, but if the wheel is irregularly machined, the stresses will be bunched and necessarily greater than normal, being at times sufficient to burst the hub. Under a vertical load of 200,000 lb. the maximum compressive stress occurs on the radial line between the rail and the hub amounting to about 18,000 lb. in the 725 lb. M. C. B. wheel; the tensile stresses in the tangential direction are about 12,000 lb. These stresses alternate at each revolution of the wheel. The maximum stresses are in the front plate. In the back plate the load stresses are practically nil.

The stresses from vertical load within the limits of railway practice are practically negligible.

The greatest stresses, and therefore the most important are the temperature stresses; for example, a 625 lb. wheel was placed in a brake shoe testing machine and operated at various velocities under a continuous shoe pressure of 1,500 lb.; this corresponds to the retardation required for a 50-ton car on a 3 per cent grade when operated at 5 m. p. h. and on a 2 per cent grade when operated at 50 m. p. h. Thermo-couples were placed $\frac{1}{2}$ in. under the surface of the tread, under the rim, at the plate intersection and in the hub. These couples were connected by brushes to a collector ring insulated from the axle so that temperatures could be taken from any part of the wheel at any time without stopping the machine. After running the equivalent of 25 miles, the maximum stresses developed near the intersection of plates were found to be:

5 miles per hour.....	10,000 lb. per sq. in.
10 miles per hour.....	12,000 lb. per sq. in.
20 miles per hour.....	15,000 lb. per sq. in.
30 miles per hour.....	18,000 lb. per sq. in.
40 miles per hour.....	21,000 lb. per sq. in.
50 miles per hour.....	24,000 lb. per sq. in.

Since the above is a greater retardation than is required for controlling 30-ton cars it is evident that if the shoe pressure could be made uniform on all wheels of the train there would be no over-heating of wheels but there are so many

*Abstract of a joint address delivered before the Railway Club of Pittsburgh by George W. Lyndon, president, and F. K. Vial, consulting engineer, representing the Association of Manufacturers of Chilled Iron Wheels.

opportunities for irregularities in service that at least 200 per cent above the theoretical retardation required must be taken into consideration when designing wheels. The test also indicates the great benefit of thermal or cooling stations. Making standards for the car wheel without reference to fundamental principles is absolutely unjustifiable.

We may say frankly that the work which has been done for the past eight years by our association, in conjunction with committees and other associations with which we have had to deal, has not yielded us material results; nevertheless we have gone along in our work, firmly believing that we were on the right track and that sooner or later our recommendations would be endorsed.

RELOCATION OF FREIGHT EQUIPMENT

Reports to the Railroads' War Board from the Commission on Car Service show that orders have been given since May 1 to 36 separate railroads to move immediately 68,814 freight cars to 54 other railroads and that, of the total, 46,682 cars have actually been received by the roads for whose benefit this arbitrary movement was ordered, while 51,795 cars have already been delivered by the initial roads to intermediate lines in the direction of ultimate destination. This has been done by the Car Service Commission under the authority given it in an order of the War Board on April 26 to relocate freight equipment. In the first general order of the Commission on Car Service on the same date it was stated that the commission would undertake to regulate car supply as the exigencies may require and that roads having on line in excess of 100 per cent of their ownership of equipment, treating each classification separately, must so regulate their car handling as not to exceed the percentage on line as of April 1, 1917, or as may be designated by the Commission on Car Service.

The cars have been moved without load and in the quickest possible time, often in train load lots, from roads on which there has been an accumulation to roads on which there has been a shortage or which have had an especial need of cars for important shipments of materials needed by the government. As the principal movement has been from the east to the south and the west the empty haul has been in the direction in which the empty haul naturally accrues because of the preponderance of loaded movement to the east.

About half of the cars have been ordered to western roads and most of the others to southeastern lines.

In a statement announcing the distribution of these orders, Fairfax Harrison, chairman of the Railroads' War Board, says:

"In ordering empty freight cars to be promptly moved from one railroad to another, regardless of ownership, the Railroads' War Board has adopted a policy new to American railroad usage and hopes thereby to solve the problem of rapidly mobilizing in different sections of the country the freight cars necessary to handle the abnormal government and commercial traffic that war conditions have produced.

"Among the immediate and important results of this redistribution of cars will be the increased facilities for the prompt shipment of lumber to the army cantonment sites and the ship-building yards. Lumber for cantonments is to be supplied from the Carolinas, Florida, Alabama, Mississippi, Louisiana, and Arkansas. Thousands of extra cars have been supplied to the lines operating in these States.

"Mississippi and Alabama will supply the bulk of the lumber for new wooden ships that are being built, and the extra cars ordered there assure the movement of lumber to the Atlantic Coast shipyards.

"The movement of lumber for commercial purposes is likewise being facilitated in Mississippi, Alabama and Tennessee.

"In addition to accelerating the lumber movement, the redistribution of cars is expected to assist materially in the transportation of grain from the Middle West to the East. It has already facilitated the shipping of potatoes and other produce from Texas and the Southeast. It has also provided additional facilities for moving live stock from Texas into the Western pasturage territory."

The following table shows the lines to which cars have been ordered from other railroads by the Commission on Car Service:

	No. cars ordered
Alabama, Tennessee & Northern.....	1,012
Alabama & Vicksburg	750
Atlanta, Birmingham & Atlantic.....	1,200
Atlantic Coast Line	4,300
Central of Georgia	800
Chicago Great Western.....	1,500
Chicago, St. Paul, Minneapolis & Omaha.....	1,500
Cincinnati, Bluffton & Chicago.....	16
Cincinnati, Indianapolis & Western.....	800
Chicago & Alton	700
Chicago, Findlay & Ft. Wayne.....	100
Chicago & Eastern Illinois.....	895
Chicago, Rock Island & Pacific.....	2,000
Carolina, Clinchfield & Ohio.....	200
Delaware & Hudson	48
Georgia	375
Georgia & Florida	200
Gulf Coast Lines	925
Gulf, Mobile & Northern	650
Georgia, Southern & Florida	250
Gulf & Ship Island.....	870
Illinois Central	5,777
International & Great Northern.....	159
Kansas City Southern.....	200
Kansas City, Mexico & Orient	300
Louisiana & Arkansas	400
Louisville & Nashville.....	6,737
Louisiana Ry. & Navigation Co.....	1,000
Meridian & Memphis	250
Missouri, Kansas & Texas.....	1,200
Minneapolis & St. Louis.....	1,500
Missouri Pacific	4,066
Mississippi Central	550
Mobile & Ohio	5,284
Nashville, Chattanooga & St. Louis.....	2,250
New Orleans Great Northern.....	700
Norfolk Southern	1,909
Richmond, Fredericksburg & Potomac.....	100
San Antonio & Aransas Pass.....	250
San Antonio, Uvalde & Gulf.....	183
Seaboard Air Line	1,550
Southern Railway System	2,192
Sunset Central	2,100
St. Louis-San Francisco	1,500
St. Louis Southwestern	5,949
Soo Lines	1,400
Texas Mexican	158
Texas Pacific	500
Toledo, Peoria & Western.....	300
Toledo, St. Louis & Western.....	159
Tremont & Gulf.....	100
Union Pacific	300
Vandalia	200
Wabash	500

68,814

The roads from which the cars were ordered, and the number ordered from each are as follows:

	No. of cars
Atchison, Topeka & Santa Fe.....	100
Ann Arbor	700
Baltimore & Ohio.....	4,900
Boston & Albany	1,550
Boston & Maine	5,692
Chicago & Alton	150
Chicago & Eastern Illinois	130
Chicago, Burlington & Quincy.....	400
Chesapeake & Ohio	1,000
Central of New Jersey.....	1,950
Cincinnati, Hamilton & Dayton	300
Chicago, Milwaukee & St. Paul.....	200
Cleveland, Cincinnati, Chicago & St. Louis.....	425
Colorado & Southern	300
Delaware, Lackawanna & Western.....	1,023
Denver & Rio Grande	300
Erie	1,550
Illinois Central	300
Kansas City Southern	100
Lehigh Valley	2,775
Louisville & Nashville.....	450
Michigan Central	2,500
Missouri Pacific	1,000
Missouri, Kansas & Texas.....	100
Mobile & Ohio	200
New York Central	9,163
New York, Chicago & St. Louis.....	2,948
Norfolk & Western	2,754
New York, New Haven & Hartford.....	1,700
Philadelphia & Reading	2,400
Pennsylvania System	18,709
Seaboard Air Line	275
Southern Railway System	2,320
St. Louis-San Francisco	50
St. Louis Southwestern	100
Western Maryland	300

68,814

General News Department

The Baltimore & Ohio is equipping its locomotives with electric headlights at the rate of 75 engines a month. All of the road engines, 2,500 of them, are to have these headlights.

At the last session of the Tennessee legislature a law was enacted which provides that drivers of automobiles shall stop within 50 ft. on approaching all railroad crossings unprotected by watchmen or gates and that they shall also look and listen before proceeding.

The freight house of the New York Central and the Cleveland, Cincinnati, Chicago & St. Louis, at Cleveland, Ohio, was destroyed by fire July 22, together with a great quantity of merchandise. The building was 880 ft. long, 90 ft. wide and two stories high.

The Philadelphia & Reading has made a general advance in the pay of telegraphers, said to be \$5 a month.

Following negotiations with members of shop men's unions on its lines, the Chicago & Eastern Illinois recently granted an increase of $7\frac{1}{2}$ cents an hour to skilled machinists and various other increases to other shop men.

The Chicago & Alton recently granted various increases in wages to its shopmen. They include $7\frac{1}{2}$ cents an hour for skilled mechanics, 6 cents an hour for helpers of the same class, $2\frac{1}{2}$ cents an hour for apprentices, and $3\frac{1}{2}$ cents to $6\frac{1}{2}$ cents to car repair men.

The Chicago, St. Paul, Minneapolis & Omaha, as well as other lines in northwestern territory, recently revised the wage schedules of its machinists and blacksmiths, and is now revising the schedules of various other crafts employed in the mechanical and car department shops. These negotiations have resulted in increases to the men employed in these occupations ranging from 1 cent to $7\frac{1}{2}$ cents an hour.

The Rock Island has made an increase of 10 per cent in the pay of all unorganized employees, to be effective from July 16. It is estimated that between 3,000 and 4,000 employees are affected. An increase has been granted also to the shopmen, the main points of which are as follows: $8\frac{1}{2}$ cents to machinists, boilermakers and blacksmiths; 7 cents to carmen; 7 cents to machinists', sheet metal workers' and carmen's helpers; $7\frac{1}{2}$ cents east of the Missouri river, and 7 cents west of the river to boilermakers' and blacksmiths' helpers and helper apprentices; $2\frac{1}{2}$ cents to boilermaker and blacksmith regular apprentices, and to machinist, sheet metal work and carmen apprentices. The minimum hour-rate for sheet metal workers will be raised to 52 cents, by increases of one cent each month. Monthly rated men in the car department will receive an increase of \$15, and piece workers an increase of 15 per cent. The increases are retroactive from June 1. The eight-hour day is granted from September 1, except for those employees in the car department whose duties are regulated by the transportation department.

In the yards of the Bush Terminal, Brooklyn, N. Y., one day last week, a large number of stenographers and other women and girls from the offices of the Terminal gave demonstrations, before visitors from a number of large corporations, of their ability to do outdoor work, such as running locomotives and electric motors, managing derricks and other apparatus, and directing the transfer of freight.

To preserve the pension rights of employees of the Chicago & North Western entering military service, R. H. Aishton, president, has issued instructions requiring the head of each department to advise the secretary of the pension board of the names of employees entering the service, together with their positions and the dates when they leave railroad service. When a former employee is discharged from military service and returns to the railroad the head of his department will be required to advise

the secretary of the pension board promptly of the absentee's name, the date of his re-entering the service, and the position he holds.

The Pennsylvania Railroad has decided to suspend, temporarily, the regulation covering the age limit for employment. The rule heretofore in force prohibited the hiring of new employees, in any branch of the service, above the age of 45 years. Under the new rule, which has been adopted to meet war conditions, persons between the ages of 45 and 70 years may be employed during the war and for a period of six months thereafter. Such employment is not to be considered permanent, and it will not carry with it the privileges of the pension department. Numbers of former employees have already been taken into the service.

The Thirteenth Engineers (Railways), United States Army, has moved to the Atlantic seaboard on its way to France. Two companies started on July 18, and the remainder of the contingent on July 21. All of the nine railway regiments organized under the direction of S. M. Felton, president of the Chicago Great Western, were recently renamed and renumbered, ten having been added to each of the former numbers. For example, the regiment until recently stationed at Chicago and formerly known as the Third Reserve Engineers, is now the Thirteenth Engineers (Railways), United States Army. Before leaving their quarters on the Municipal pier at Chicago, the Thirteenth Engineers (Railways), United States army, were presented with regimental colors by S. M. Felton, president of the Chicago Great Western, and C. H. Markham, president of the Illinois Central.

The Baltimore & Ohio, looking to the highest fitness for the war, has inaugurated a campaign to improve the sanitary and hygienic condition of its employees. Dr. E. M. Parlett, medical officer of the railroad's welfare bureau, has addressed a communication to employees, urging them to devote particular attention to sanitary conditions in their homes and communities. He says: "The water supply, sewage and garbage disposal, milk inspection, fly and mosquito extermination, overcrowding in the home and like subjects in every community are matters of vital concern. We cannot hope to curtail tuberculosis, malaria, typhoid, pneumonia, intestinal diseases, etc., among our employees unless all communities, and our own shops, properties and equipment are maintained to a high standard of sanitation, coupled with the knowledge and practice of personal hygiene on the part of our employees. . . . Make it your duty to become acquainted with the members of your local and state boards of health; become alive to your opportunities for the protection of your own and your family's health and life."

Don't Be a Slacker

O. C. Castle, superintendent of car service of the Southern Pacific Lines in Texas and Louisiana, recently issued an appeal to officers and employees of his road to conserve the car supply. His circular is entitled "Don't Be a Slacker" and reads in part:

"The man who is obligated to bear arms, but who shirks his duty is called a 'slacker.' This term may now appropriately be applied to a man who neglects any act which may increase the efficiency of a freight car. The 'spirit of '76'; the heroism and sacrifice of '61, and the spectacular achievements of '98 will not win the present war. Neither will the car performance of last year and last month meet the crisis that confronts us today. A new goal must be set. All precedents which hamper efficiency must be brushed aside and new methods evolved. Pointed appeals have been made to shippers; national and state commissions have approved increases in demurrage charges, and business associations throughout the country are organizing campaigns for improved handling by the public. These, however, must be supplemented by individual action. It is, therefore, the patriotic duty of every officer and employee to check freight car waste.

Do not regret the fact that circumstances prevent you from serving with armed forces on land or sea. You can render just as valuable service by doing your *individual* duty in conserving freight car energy. By the extent that you perform this duty your patriotism will be gaged. If you fail in this duty, you will be a slacker. *Don't Be a Slacker!*"

Lucky "13"

W. E. Johnston, excursion agent of the Washington-Sunset route of the Southern Pacific, has made 938 trips between San Francisco, Cal., and Washington, D. C., covering a period of 17 years and 8 months. He left on Friday 496 times. Moreover, he made one round trip every 13 days, and 13 round trips every 6 months. The total mileage covered during the above period was 3,404,102 miles. Assuming an average of 20 passengers on each trip, Mr. Johnston has accompanied 18,760 passengers across the continent.

Samuel M. Felton Appointed Director-General of Railways

Samuel M. Felton, president of the Chicago Great Western and heretofore adviser to General Black, chief of engineers of the United States army, has been appointed by the Secretary of War director general of railways, with office at Washington, D. C. According to the order announcing his appointment, Mr. Felton is charged under the chief of engineers with the organization and despatch abroad of all railway forces and the purchase of all railway material, both for initial action and for continuous supplies for operation. Mr. Felton has been in charge of the organization of the railway engineer regiments for service abroad, as previously described in the *Railway Age Gazette*, or more particularly in the Patriotic War Number of June 22, page 1274.

New Laws

The legislature of Connecticut has passed a law authorizing railways to clear the brush off from unimproved lands adjacent to their rights of way within 100 ft. of the track. This right must be exercised under the direction of the State Forest Fire Warden, and, under suitable restrictions, inflammable substances may be burnt on the premises under the supervision of the town fire warden.

The legislature of Idaho has passed a law requiring railroads to destroy weeds on their rights of way in accordance with orders issued by officers of the state or county. Another law in Idaho empowers the Public Utilities Commission, on receipt of a complaint and after hearing, to order gates, flagmen or automatic bells at highway crossings.

Appeal for Better Handling of Foreign Cars

E. E. Betts, superintendent of transportation of the Chicago & North Western, has sent a circular letter to all superintendents of the system, calling attention to the loss in time and money resulting from unnecessary delay in the handling of foreign cars. He said in part:

"Our standing instructions provide that any car on which home routing or disposition is desired must be reported when the car arrives at any station or in any yard under load, in order that billing may be in the possession of the proper employee before the car is empty and ready to move. Notwithstanding these instructions . . . about half the time the cars are held at a station until they are empty and ready to move, and then the disposition or home routing is requested. Where this course is pursued the cars are almost invariably delayed one day, which is equal to 60 cents now, and frequently two days, or \$1.20, to say nothing of the loss of utility of the car, which now, and for some time to come, equals at least five dollars a day.

"In the modern game of baseball every player has got to know what to do with the ball before he gets it. If after the ball is in his possession he has to run over to the captain and find out what to do with it, the game will be lost; and any player who would attempt to play the game in this manner would be immediately relegated to the bush league. The handling of foreign cars is not dissimilar. Every player in the game has got to know what to do with the car when it is ready to move."

Railway Revenues for May

The Interstate Commerce Commission has issued its monthly summary of reports of large roads for May, 1917, covering 230,905 operated miles. Railway operating revenues for the month amounted to \$346,775,079, as compared with \$301,045,712 in May, 1916. Operating expenses increased from \$197,410,491 in May, 1916, to \$238,682,279, and the operating income increased from \$90,931,795 to \$92,079,548. For five months of the year operating revenues show an increase from \$1,396,680,987 to \$1,548,033,610. Expenses increased from \$950,606,609 to \$1,118,191,720. Taxes increased from \$62,568,543 to \$72,332,167, and railway operating income was \$357,258,663, or \$1,547 per mile, as compared with \$383,213,498, or \$1,664 per mile in May, 1916. For the five months both the southern and western districts show an increase in operating income, the decrease being attributable to the eastern roads.

A Freight Conductor's Experience

A careful watch of your train, and a proper attention to hot boxes at the right time, will avoid the renewal of brasses to such an extent that the saving will run up into the thousands of dollars. In my 27 years' experience I have found that nineteen times out of twenty, a hot box can be properly cared for in less time than it takes to set the car out, and by giving box attention at usual stopping places, you will be able to get journal to a bearing again. In addition to saving brasses, you are saving delays to freight, and possibly have kept future shipments from consignor from being routed over some other line. Suppose you set out, fifty miles from your terminal, a 70-ton car of coal, you have lost for your engine 50 times 70, or 3,500 ton miles. Take a system like the Illinois Central and you can readily see what a daily loss of earning power of locomotives may occur from hot boxes.—G. S. Rought, conductor, Illinois Central.

War Supplies Handled Promptly

The War Department has authorized the statement that not a hitch has developed in getting supplies to the five divisions of the National Guard called into federal service on July 15, and that each depot quartermaster who had a division to provide for had everything needed by the men before they left for the southern camps where they are to train. The supplies for each depot were ordered two weeks in advance, and each depot quartermaster was instructed to report failure of any portion of his consignment to arrive. No such reports were received, with the exception of a small shipment which had not been started. For the shorter distances supplies were delivered by auto truck, but the guard of Ohio and West Virginia were supplied from Jeffersonville, Ind.; the Michigan and Wisconsin divisions from Chicago and the division made up of the units of Minnesota, Iowa, North and South Dakota and Nebraska was supplied from Omaha by rail. The date when the troops from the several states shall actually begin to move to the southern camps has been left to the department commanders. The second increment of the National Guard to be called into federal service was mobilized on July 25.

How Alabama Great Southern Won Safety Medal

The June Safety Bulletin of the American Museum of Safety contains an article outlining the safety provisions which won for the Alabama Great Southern the E. H. Harriman memorial gold medal. The record for this road during 1916 showed not one passenger killed, no employees killed in train accidents, only one fatality in other than a train accident, and no fatalities and only two injuries among 2,000 industrial workers employed by the company. The number of adverse marks charged against the Alabama Great Southern based on the number of locomotive miles run, the tons of freight and the number of passengers carried one mile during the year was 39.76, as compared with 112.30, the next best accident record submitted in the competition.

The bulletin says that "the entire line from Chattanooga, Tenn., to Meridian, Miss., 309 miles, is equipped with automatic block signals, furnishing protection both to following and to opposing trains. Interlocking plants are installed at railroad

crossings and junction points with other roads, at the ends of double track and at draw-bridges over the Warrior and Tombigbee rivers. Grade crossings at important places have been eliminated, and other highway crossings at grade are protected by gates, bell signals or by watchmen. Bridges and trestles are equipped with foot walks and safety stations for the protection of employees, who must use them. Telephones have been installed at the ends of tunnels for the protection of men who must pass through on handcars. Curves are being systematically eliminated or reduced, and obstructions to view at highway crossings have been removed. Frequent surprise tests are made by local officers to determine the observance of signal indications and the action taken by employees in train, engine and yard service. Daily inspections of track, bridges and other structures are made by section foremen and track walkers, and less frequent periodical inspections are made by higher officers. Before employment or promotion employees are required to pass exacting physical and mental tests. Standard safety devices have been installed in shops and yards, and on cars and engines. Although safety rules are rigidly enforced, in the past few years the extreme penalty of dismissal for their violation has been unnecessary except in a few cases. Safety committees have been organized among the employees, the personnel of which is changed at frequent intervals so that all of the employees of the various departments may have an opportunity to serve. All the company's buildings and passenger cars are equipped with sanitary conveniences of the best modern type, which are maintained in a condition of scrupulous cleanliness."

The Government Railroad in Alaska

The importance of the early completion of the government railroad in Alaska in helping the United States to meet the burdens of war is set forth in a statement issued by the Secretary of the Interior. The railroad, it is pointed out, will hasten the development of Alaska's vast resources; will encourage the production of foodstuffs, thus reducing the territory's dependence upon the United States for supplies; will furnish coal in unlimited quantity for the navy, obviating the necessity for the transcontinental shipment to the Pacific of fuel for government vessels, and thus release thousands of cars for the transportation of war materials and foodstuffs.

The main line of the road is now under construction from Seward, on the Pacific Coast, inland for 470 miles to Fairbanks, on the Tanana river, a large and navigable tributary of the Yukon. There is now in operation 150 miles.

The road taps two large coal fields, the Matanuska and the Nenana. The coal in the Matanuska field has been tested by the navy and found to be excellent for steaming purposes. The Nenana coal was recently tested by the Bureau of Mines and found to be a fair grade of lignite. It is estimated that the supply in both of these fields is practically inexhaustible. By September of this year the branch will be completed to the Matanuska coal field. Dredging is under way at Anchorage, the nearest tidewater port to the coal fields, in order that deep-draft ocean vessels may be loaded at the docks. When the gap, about 25 miles in length, along Turnagain Arm, between Anchorage and Seward, is completed, coal can be shipped from the latter port. It is planned to close this gap early in 1918.

Coal mined from the Matanuska field is now being used in the construction of the railroad. Construction work is being pushed as rapidly as possible, and it is estimated that at the present rate Matanuska coal can be delivered for the needs of the navy and for general use on the Pacific Coast in the early summer of 1918.

The railroad is also being constructed southward from Fairbanks to tap the Nenana field, making the coal here available for the development of such mineral deposits as copper, antimony and gold in this part of the country. Mining here is practically at a standstill, owing to the lack of suitable fuel. The Nenana coal will also be made available for use on the railroad locomotives and on the river steamers of the interior.

The railroad traverses several rich agricultural valleys, the development of which will supply Alaska's needs and obviate the necessity of making shipments of food products from the states. Along the many streams adjacent to the railroad is found a plentiful supply of cottonwood and spruce, from which pulp for paper making can be derived.

MEETINGS AND CONVENTIONS

The following list gives names of secretaries, dates of next or regular meetings and places of meeting of those associations which will meet during the next three months. The full list of meetings and conventions is published only in the first issue of the Railway Age Gazette for each month.

- AMERICAN ASSOCIATION OF DINING CAR SUPERINTENDENTS.—H. C. Boardman, D. L. & W., Hoboken, N. J. Next convention, to have been held October 22-24, 1917, San Francisco, Cal., indefinitely postponed.
- AMERICAN ASSOCIATION OF PASSENGER TRAFFIC OFFICERS.—W. C. Hope, C. R. R. of N. J., 143 Liberty St., New York. Next meeting, October 16-17, St. Louis.
- AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. W., Chicago. Next convention, October 16-18, 1917, St. Paul, Minn.
- AMERICAN SOCIETY OF CIVIL ENGINEERS.—Chas. Warren Hunt, 220 W. 57th St., New York. Regular meetings, 1st and 3d Wednesday in month, except July and August, 220 W. 57th St., New York.
- ASSOCIATION OF RAILWAY TELEGRAPH SUPERINTENDENTS.—W. L. Connelly, Supt. of Telegraph, Indiana Harbor Belt, Gibson, Ind. Next annual meeting to have been held September 18, 1917, Washington, D. C., indefinitely postponed.
- CANADIAN RAILWAY CLUB.—James Powell, Grand Trunk, P. O. Box 7, St. Lambert (near Montreal), Que. Regular meetings, 2d Tuesday in month, except June, July and August, Windsor Hotel, Montreal, Que.
- CANADIAN SOCIETY OF CIVIL ENGINEERS.—Clement H. McLeod, 176 Mansfield St., Montreal, Que. Regular meetings, 1st Thursday in October, November, December, February, March and April. Annual meeting, January, Montreal.
- CAR FOREMEN'S ASSOCIATION OF CHICAGO.—Aaron Kline, 841 Lawlor Ave., Chicago. Regular meetings, 2d Monday in month, except June, July and August, Hotel La Salle, Chicago.
- CENTRAL RAILWAY CLUB.—H. D. Vought, 95 Liberty St., New York. Regular meetings, 2d Friday in January, May, September and November. Annual dinner, 2d Thursday in March, Hotel Statler, Buffalo, N. Y.
- CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S ASSOCIATION.—W. R. McMunn, New York Central, Albany, N. Y. Next convention, September, 1917, St. Louis.
- CINCINNATI RAILWAY CLUB.—H. Boutet, Chief Interchange Inspector, Cin'ti Rys., 101 Carew Bldg., Cincinnati. Regular meetings, 2d Tuesday, February, May, September and November, Hotel Sinton, Cincinnati.
- ENGINEERS' SOCIETY OF WESTERN PENNSYLVANIA.—Elmer K. Hiles, 568 Union Arcade Bldg., Pittsburgh, Pa. Regular meetings, 1st and 3rd Tuesday, Pittsburgh, Pa.
- GENERAL SUPERINTENDENTS' ASSOCIATION OF CHICAGO.—A. M. Hunter, 321 Grand Central Station, Chicago. Regular meetings, Wednesday, preceding 3d Thursday in month, Room 1856, Transportation Bldg., Chicago.
- INVESTMENT BANKERS' ASSOCIATION OF AMERICA.—Frederick R. Fenton, 11 W. Monroe St., Chicago. Annual convention, October 1-3, 1917, Baltimore, Md.
- MAINTENANCE OF WAY AND MASTER PAINTERS' ASSOCIATION OF THE UNITED STATES AND CANADA.—F. W. Hager, Fort Worth & Denver City, Fort Worth, Tex. Next convention, October 16-18, 1917, Cleveland, Ohio.
- NATIONAL ASSOCIATION OF RAILWAY COMMISSIONERS.—Jas. B. Walker, 120 Broadway, New York City. Next annual convention, October 16, 1917, Washington, D. C.
- NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meeting, 2d Tuesday in month, except June, July, August and September, Boston.
- NEW YORK RAILROAD CLUB.—Harry D. Vought, 95 Liberty St., New York. Regular meeting, 3d Friday in month, except June, July and August, 29 W. 39th St., New York.
- NIAGARA FRONTIER CAR MEN'S ASSOCIATION.—Geo. A. J. Hochgrebe, 623 Brisbane Bldg., Buffalo, N. Y. Meetings, 3d Wednesday in month, New York Telephone Bldg., Buffalo, N. Y.
- PACIFIC RAILWAY CLUB.—W. S. Wollner, Assistant to Chief Engineer, Northwestern Pacific R. R., San Francisco, Cal.
- PEORIA ASSOCIATION OF RAILROAD OFFICERS.—F. C. Stewart, 410 Masonic Temple Bldg., Peoria, Ill. Regular meetings, 3d Thursday in month, Jefferson Hotel, Peoria.
- RAILROAD CLUB OF KANSAS CITY.—Claude Manlove, 1008 Walnut St., Kansas City, Mo. Regular meetings, 3d Saturday in month, Kansas City.
- RAILWAY CLUB OF PITTSBURGH.—J. B. Anderson, Room 207, P. R. R. Sta., Pittsburgh, Pa. Regular meetings, 4th Friday in month, except June, July and August, Pittsburgh Commercial Club Rooms, Colonial-Annex Hotel, Pittsburgh.
- RAILWAY FIRE PROTECTION ASSOCIATION.—C. B. Edwards, office of the president's assistant, Seaboard Air Line, Norfolk, Va. Next meeting, October 2-4, 1917, St. Louis, Mo.
- RAILWAY REAL ESTATE ASSOCIATION.—R. H. Morrison, Assistant Engineer, C. & O., Richmond, Va. Next convention, October, 1917, Duluth, Minn.
- RAILWAY SIGNAL ASSOCIATION.—C. C. Rosenberg, Myers Bldg., Bethlehem, Pa. Next annual convention, September, 1917, Atlantic City, N. J.
- RICHMOND RAILROAD CLUB.—F. O. Robinson, C. & O., Richmond, Va. Regular meetings, 2d Monday in month, except June, July and August.
- ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—P. J. McAndrews, C. & N. W., Sterling, Ill. Next annual convention, September 18-21, 1917, Hotel Auditorium, Chicago.
- ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo. Regular meetings, 2d Friday in month, except June, July and August, St. Louis.
- SIGNAL APPLIANCE ASSOCIATION.—F. W. Edmunds, 3868 Park Ave., New York. Meetings with annual convention Railway Signal Association.
- SOUTHERN & SOUTHWESTERN RAILWAY CLUB.—A. J. Merrill, Grand Bldg., Atlanta, Ga. Regular meetings, 3d Thursday, January, March, May, July, September, November, 10 a. m., Piedmont Hotel, Atlanta.
- TRAFFIC CLUB OF CHICAGO.—W. H. Wharton, La Salle Hotel, Chicago.
- TRAFFIC CLUB OF NEW YORK.—C. A. Swope, 291 Broadway, New York. Regular meetings, last Tuesday in month, except June, July and August, Waldorf-Astoria Hotel, New York.
- TRAFFIC CLUB OF PITTSBURGH.—D. L. Wells, Gen'l Ag't, Erie R. R., 1924 Oliver Bldg., Pittsburgh, Pa. Meetings bi-monthly, Pittsburgh.
- TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, N. Y. C. R. R., Cleveland, Ohio. Next convention, September, 1917, Chicago.
- UTAH SOCIETY OF ENGINEERS.—Frank W. Moore, 1111 Newhouse Bldg., Salt Lake City, Utah. Regular meetings, 3d Friday in month, except July and August, Salt Lake City.
- WESTERN CANADA RAILWAY CLUB.—L. Kon, Immigration Agent, Grand Trunk Pacific, Winnipeg, Mar. Regular meetings, 2d Monday, except June, July and August, Winnipeg.
- WESTERN RAILWAY CLUB.—J. W. Taylor, 1112 Karpen Bldg., Chicago. Regular meetings, 3d Monday in month, except June, July and August, Hotel Sherman, Chicago.

REVENUES AND EXPENSES OF RAILWAYS

MONTH OF MAR. 1917

Name of road.	Average mileage operated during period.	Operating revenues				Operating expenses				Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
		Freight.	Passenger.	Total (inc. misc.)	Maintenance of way and structures.	Equip. ment.	Traffic.	Trans- portation.	Miscel- lanous.				
Alabama Great Southern.....	312	\$402,916	\$131,575	\$534,491	\$66,069	\$116,910	\$17,746	\$125,833	\$4,870	\$189,559	\$21,457	\$167,917	-\$41,625
Atlantic City.....	170	115,328	128,902	244,230	25,813	25,813	3,139	122,685	84	71,111	10,000	64,452	18,433
Central Vermont.....	411	272,615	389,932	662,547	45,705	55,986	8,143	207,855	1,977	3,480,267	15,565	4,577	15,565
Chicago, Burlington & Quincy.....	9,373	7,806,824	1,790,373	9,597,197	1,497,013	1,575,017	150,862	3,432,322	178,023	3,480,267	448,570	3,040,697	540,570
Cincinnati, New Orleans & Texas Pacific.....	337	813,987	218,879	1,032,866	86,674	303,521	31,507	332,752	2,624	326,061	46,500	281,560	-37,999
Duluth, Winnipeg & Pacific.....	191	158,566	19,440	178,006	23,624	22,260	3,567	74,928	6,974	131,353	9,083	41,215	-4,905
Georgia Southern & Florida.....	402	132,366	56,578	188,944	29,722	54,438	8,424	92,130	1,813	186,220	11,479	20,560	-8,131
Kansas City Terminal Co.....	24	.....	.....	.....	3,971	10,698	.....	32,120	228	34,434	18,536	20,996	-469
Missouri, Oklahoma & Gulf of Texas.....	134	22,583	186	22,769	2,941	2,409	1,867	3,252	.....	7,650	184	5,271	-8,901
New Orleans & North Eastern.....	204	284,800	74,057	358,857	33,712	70,453	10,869	131,868	6,884	264,174	30,000	107,247	-9,833
Philadelphia & Reading.....	1,127	4,851,867	625,431	5,477,298	366,434	1,019,632	52,827	2,370,775	14,030	100,601	137,939	1,768,373	-128,786
Port Reading.....	21	152,773	.....	152,773	6,942	7,082	39	84,459	.....	1,644	10,000	61,716	17,131
St. Louis, Iron Mountain & Southern.....	3,539	2,947,288	671,759	3,619,047	562,512	591,117	87,737	1,028,703	12,109	78,606	170,435	1,333,128	847,602
St. Louis, Merchant's Bridge Terminal.....	9	.....	495	495	30,871	13,784	7,507	142,103	.....	98,263	7,517	90,746	46,893
St. Louis, San Francisco.....	4,752	3,161,916	1,132,103	4,294,019	536,040	678,375	67,030	1,577,840	.....	1,622,832	187,324	1,434,402	.....
St. Louis, San Francisco & Texas.....	244	68,964	26,757	95,721	21,513	15,913	2,202	59,075	.....	104,287	1,491	-287	-4,846
St. Louis Southwestern.....	943	736,821	145,907	882,728	72,227	161,893	32,130	211,941	2,133	506,398	46,954	372,228	162,531
St. Louis Southwestern of Texas.....	811	309,326	85,415	394,741	74,098	115,969	15,164	188,781	1,164	20,995	18,410	-7,287	6,013
San Antonio & Aransas Pass.....	726	226,150	70,658	296,808	64,642	52,876	7,479	163,921	.....	13,576	15,000	2,818	16,368
Seaboard.....	3,461	1,834,694	435,242	2,270,936	241,767	428,232	73,486	906,652	13,109	720,916	112,500	608,082	32,955
Southern.....	6,983	5,059,864	1,538,627	6,598,491	714,904	1,238,367	180,617	2,532,019	44,877	4,838,981	319,286	2,112,474	78,818
Southern in Mississippi.....	281	67,474	25,230	92,704	15,673	10,207	1,979	42,271	.....	74,232	10,147	15,617	2,088
Southern Pacific.....	7,096	8,334,306	2,705,318	11,039,624	1,101,490	1,518,603	172,809	3,974,803	176,072	7,210,566	525,053	4,343,468	1,022,792
Spokane, Portland & Seattle.....	555	413,160	120,577	533,737	73,221	45,825	7,507	142,103	4,757	286,257	58,300	227,950	118,684
Tennessee Central.....	295	121,079	32,456	153,535	22,750	26,756	5,345	59,629	.....	120,917	4,800	38,104	-4,205
Terminal R. R. Ass'n. of St. Louis.....	37	.....	472	472	29,398	20,696	1,010	97,369	1,752	153,860	37,667	118,031	-17,318
Texas & Pacific.....	468	357,964	118,060	476,024	39,501	78,518	9,246	148,398	13,054	289,991	217,641	196,146	110,892
Texas & Pacific.....	1,947	1,224,901	518,937	1,743,838	198,246	270,949	43,456	697,071	3,701	1,226,279	85,000	552,281	318,326
Toledo & Ohio Central.....	436	528,158	51,054	579,212	100,090	101,844	7,662	254,167	1,807	11,487	136,740	24,788	111,145
Toledo, Peoria & Western.....	248	68,203	34,268	102,471	18,924	28,815	2,867	41,337	.....	477,113	7,500	4,509	-3,149
Toledo, St. Louis & Western.....	455	530,400	34,490	564,890	94,964	82,871	18,566	212,746	.....	419,631	20,000	151,355	-38,718
Trinity & Brazos Valley.....	369	60,158	8,821	68,979	22,301	57,522	2,657	41,455	.....	131,074	5,160	-56,108	-33,445
Union Pacific.....	129	52,047	16,588	68,635	10,650	11,432	2,424	43,002	376	71,418	4,000	12,915	-10,233
Union Pacific.....	3,622	4,796,061	1,025,584	5,821,645	961,430	782,817	126,580	1,634,511	126,941	2,637,518	455,600	2,181,594	86,039
Union R. R. of Baltimore.....	35	.....	32,582	32,582	189,849	12,713	.....	7,474	.....	22,467	10,086	157,295	-990
Union R. R. of Penna.....	8	.....	.....	.....	86,237	164,631	125	253,043	.....	509,861	-12,751	-20,087	-172,328
Virginian.....	513	907,973	37,279	945,252	67,739	141,039	6,209	250,695	21,746	114,093	38,991	455,872	170,696
Wabash.....	2,519	2,629,571	597,446	3,227,017	365,922	400,866	86,665	1,441,697	19,743	2,391,473	105,199	1,019,137	104,677
Washington Southern.....	36	81,633	81,504	163,137	14,039	24,021	1,541	63,250	1,701	96,303	6,789	89,513	25,341
West Jersey & Seashore.....	359	236,904	337,049	573,953	110,940	103,934	10,272	239,588	4,538	487,186	41,153	103,190	-10,663
Western Maryland.....	775	910,160	80,994	991,154	120,789	236,571	23,925	403,771	10,830	825,367	36,500	198,353	-160,182
Western Railway of Alabama.....	133	65,225	41,033	106,258	15,283	28,520	7,337	39,980	2,075	97,984	6,150	14,527	-7,584
Western Pacific.....	958	757,535	125,929	883,464	149,929	77,572	20,491	237,368	12,051	411,839	36,279	375,547	211,494
Winning & Lake Erie.....	512	764,701	55,229	819,930	145,705	121,721	8,759	330,589	1,689	628,171	42,772	247,321	-123,617
Yazoo & Mississippi Valley.....	1,382	1,121,813	227,796	1,349,609	251,745	238,785	21,035	433,341	2,352	997,911	106,916	330,492	9,665

FIVE MONTHS OF CALENDAR YEAR, 1917

Name of road.	Average mileage operated during period.	Freight.	Passenger.	Total (inc. misc.)	Maintenance of way and structures.	Equip. ment.	Traffic.	Trans- portation.	Miscel- lanous.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
Alabama & Vicksburg.....	143	\$542,872	\$175,636	\$718,508	\$101,901	\$148,201	\$24,412	\$227,432	\$7,252	\$591,337	\$49,700	\$152,346	\$21,014
Alabama Great Southern.....	312	1,847,487	578,970	2,426,457	325,142	543,460	85,860	808,040	14,700	1,832,740	101,575	706,929	-20,699
Ann Arbor.....	204	1,644,009	193,376	1,837,385	114,334	214,633	27,550	575,173	1,048	438,139	65,500	186,779	90,433
Arizona Eastern.....	378	1,611,598	262,466	1,874,064	231,024	173,586	13,707	416,872	34,883	939,138	10,986	958,031	394,436
Atchison, Topeka & Santa Fe.....	8,648	39,254,355	11,792,461	51,046,816	5,737,623	9,521,060	973,269	17,365,120	111,791	34,760,757	2,597,922	18,075,627	2,649,274
Atlanta & West Point.....	93	345,188	233,613	578,801	72,062	116,681	35,523	222,384	12,631	484,241	36,275	144,111	16,198
Atlantic, Birmingham & Atlantic.....	640	1,235,085	223,388	1,458,473	216,919	251,855	79,290	708,446	199	1,314,735	58,500	215,322	6,014
Atlantic & St. Lawrence.....	167	632,989	93,101	726,090	203,154	131,278	21,665	600,103	.....	1,003,161	38,500	-215,322	-422,694
Atlantic City.....	170	419,652	413,968	833,620	123,500	98,965	17,977	544,286	.....	1,01,301	50,000	51,209	25,373
Atlantic Coast Line.....	4,776	12,271,104	4,903,574	17,174,678	2,027,183	2,879,457	332,979	6,314,271	93,823	12,036,495	6,707,938	5,800,917	322,767
Baltimore & Ohio.....	4,545	39,321,805	6,517,438	45,839,243	5,377,276	9,942,995	955,092	20,464,327	340,085	38,319,970	1,686,717	9,886,646	550,727
Baltimore & Ohio Chicago Terminal.....	79	2,271	802,363	804,634	74,721	132,101	4,947	588,673	7,759	827,737	115,620	-141,231	-172,015
Baltimore, Chesapeake & Atlantic.....	88	241,021	97,644	338,665	62,810	62,810	6,029	228,164	.....	13,140	11,798	222	-14,855
Bangor & Aroostook.....	632	1,686,502	300,132	1,986,634	261,721	315,661	19,649	753,202	20,069	1,351,970	75,000	654,623	-30,505
Belt Ry. Co. of Chicago.....	31	.....	1,544,628	1,544,628	107,225	254,652	7,029	753,202	.....	1,156,162	68,856	319,610	319,610

REVENUES AND EXPENSES OF RAILWAYS

FIVE MONTHS OF CALENDAR YEAR 1917—CONTINUED

Name of road.	Average mileage operated during period.	Operating revenues			Operating expenses			Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decrease) comp. with last year.			
		Freight.	Passenger.	Total (inc. misc.)	Maintenance of way and structures.	Equipment.	Traffic.					Trans- portation.	Miscel- laneous.	General.	Total.
Bessemer & Lake Erie.....	205	\$3,168,406	\$132,137	\$3,300,543	\$398,086	\$1,184,599	\$52,617	\$1,245,606	\$81,284	\$2,913,314	\$487,233	\$110,416	\$376,781	\$494,182
Birmingham & Garfield.....	36	1,169,784	27,113	1,217,976	114,223	147,963	6,117	190,585	.....	147,963	741,530	87,670	653,861	102,340
Birmingham Southern.....	44	347,910	10,088	357,998	83,003	117,396	4,031	226,685	.....	20,894	452,009	27,152	12,927	68,315
Boston & Maine.....	2,306	14,139,767	6,303,822	20,466,949	2,438,009	3,468,083	165,420	11,959,877	110,115	578,601	18,730,105	4,346,843	857,025	3,489,818
Buffalo & Susquehanna R. R. Corporation.....	253	630,459	30,939	672,887	104,946	2,022,742	7,439	221,701	.....	30,810	567,638	105,249	92,247	63,387
Buffalo, Rochester & Pittsburgh.....	587	4,774,741	493,123	5,338,203	538,608	1,451,414	79,839	2,245,010	7,045	139,771	4,461,686	976,516	149,000	827,512
Canadian Pacific Lines in Maine.....	234	1,228,006	104,697	1,332,703	121,624	183,710	29,143	597,738	.....	26,770	1,794,635	439,020	27,500	411,520
Carolina, Clinchfield & Ohio.....	283	1,485,535	102,099	1,627,806	160,463	252,920	82,472	365,380	.....	64,137	923,780	704,026	67,000	637,020
Central of Georgia.....	1,919	3,872,293	1,385,376	5,257,669	592,789	1,052,289	126,611	1,205,947	11,136	204,290	4,337,644	1,189,639	315,639	1,267,657
Central of New Jersey.....	684	10,731,218	2,386,556	13,117,774	1,185,306	2,755,597	140,633	5,758,011	82,591	324,378	10,065,239	2,373,375	92,800	2,466,175
Central New England.....	301	1,958,904	142,621	2,101,525	374,362	2,212,440	5,406	798,011	11,380	39,307	1,440,279	773,375	92,800	680,502
Central Vermont.....	411	1,165,419	351,984	1,517,403	184,482	2,627,730	38,534	924,477	11,380	49,251	1,470,854	77,825	77,825	159,552
Charleston & Western Carolina.....	343	707,480	148,094	855,574	149,095	1,093,827	21,874	333,616	.....	18,790	623,975	261,783	32,500	228,315
Chesapeake & Ohio Lines.....	2,380	17,252,929	2,727,899	20,000,828	2,575,233	4,301,904	294,869	7,305,455	143,384	458,241	15,068,533	6,339,271	679,250	5,659,950
Chicago & Alton.....	1,053	5,695,951	1,643,623	7,339,574	796,546	1,577,624	192,433	2,927,619	54,358	163,356	5,709,404	2,199,970	267,716	1,930,687
Chicago & Eastern Illinois.....	1,131	6,275,601	1,299,499	7,575,100	802,803	2,060,288	138,039	3,169,578	52,036	193,983	5,485,317	1,764,167	328,500	1,456,667
Chicago & Erie.....	270	2,926,137	216,877	3,143,014	278,112	443,020	92,149	1,188,975	15,217	86,155	2,456,188	936,134	156,375	779,759
Chicago & North Western.....	8,108	27,082,199	8,675,908	35,758,107	4,008,142	5,005,987	554,935	16,868,952	346,202	978,641	30,593,935	9,381,207	2,125,000	7,452,725
Chicago, Burlington & Quincy.....	9,373	34,978,471	8,690,757	43,669,228	5,305,194	7,283,323	680,585	16,014,294	691,197	1,089,989	31,064,582	17,143,679	2,150,357	14,993,322
Chicago, Detroit & Can. Gd. Trunk Jctn.....	60	315,601	73,468	389,069	50,192	1,178,822	7,434	301,193	.....	9,156	439,857	57,324	17,730	39,560
Chicago, Great Western.....	1,496	4,472,058	1,359,717	5,831,775	830,002	1,776,822	226,753	2,605,777	57,994	227,471	5,119,242	1,287,794	254,000	1,030,203
Chicago, Indianapolis & Louisville.....	654	2,596,835	784,948	3,381,783	344,173	647,992	102,024	1,365,624	2,503	93,362	2,551,397	1,127,807	181,160	946,363
Chicago Junction.....	13	.....	1,335,091	1,335,091	156,598	127,429	6,287	767,481	121,748	27,796	1,207,289	1,277,802	13,049	114,786
Chicago, Milwaukee & St. Paul.....	10,225	30,666,586	7,417,360	38,083,946	3,780,547	7,860,923	744,360	18,868,575	311,013	825,479	32,061,052	10,819,292	2,828,292	8,515,819
Chicago, Peoria & St. Louis.....	255	708,451	106,937	815,388	101,478	1,764,403	29,990	367,068	.....	29,519	704,458	151,915	43,956	107,940
Chicago, Rock Island & Gulf.....	477	1,120,385	312,565	1,432,950	225,970	515,692	50,595	521,883	6,048	46,161	1,065,007	473,083	50,000	422,940
Chicago, Rock Island & Pacific.....	756	2,952,864	753,131	3,705,995	430,970	6,404,350	686,165	12,887,056	2,048	830,684	25,333,629	8,041,468	1,570,724	6,467,315
Chicago, St. Paul, Minn. & Omaha.....	1,553	5,346,221	2,034,149	7,380,370	896,003	1,200,648	144,502	3,406,952	79,316	223,982	5,946,674	2,129,852	476,943	1,651,163
Chicago, Terre Haute & Southeastern.....	375	1,300,416	81,875	1,382,291	156,605	334,441	11,714	517,807	9,521	40,135	1,080,223	335,910	62,500	373,310
Cincinnati, Hamilton & Dayton.....	575	3,258,389	477,546	3,735,935	599,693	1,577,562	73,922	2,010,154	15,282	113,967	3,681,019	532,317	170,469	361,031
Cincinnati, Indianapolis & Western.....	322	809,823	208,166	1,017,989	129,244	181,583	36,220	485,369	2,504	37,970	877,710	246,720	48,830	197,890
Cincinnati, New Orleans & Texas Pacific.....	337	3,694,739	1,108,841	4,803,580	449,122	1,203,545	150,939	1,633,092	44,012	96,490	3,576,400	1,589,936	205,900	1,384,023
Cincinnati Northern.....	246	784,051	69,825	853,876	167,209	1,672,091	15,350	377,635	.....	16,428	713,424	168,416	35,000	133,413
Cleveland, Cincinnati, Chic. & St. Louis.....	2,387	14,127,725	4,145,660	18,273,385	1,755,807	3,811,788	408,516	8,447,522	128,784	435,193	14,977,821	5,108,280	800,000	4,304,327
Coal & Coke.....	197	419,841	81,899	501,740	89,711	1,356,898	6,291	214,359	.....	14,245	461,504	61,057	25,000	36,067
Colorado Midland.....	338	426,111	51,755	477,866	87,161	1,552,222	33,044	262,885	3,106	26,650	568,068	47,557	25,000	46,557
Colorado & Southern.....	1,103	3,263,698	610,438	3,874,136	418,491	715,800	53,597	1,295,844	23,038	129,446	2,636,216	1,556,564	224,737	1,331,503
Colorado & Wyoming.....	43	166,465	11,947	178,412	38,659	71,942	514	163,145	.....	18,835	293,094	202,332	16,470	185,863
Cripple Creek & Colorado Springs.....	87	443,454	59,095	502,549	47,467	60,818	7,240	123,257	.....	16,602	255,383	258,115	15,000	243,115
Cumberland Valley.....	164	1,497,500	271,423	1,768,923	133,664	1,621,129	21,825	586,273	4,003	49,373	951,602	901,313	68,155	833,158
Delaware & Hudson Co.—R. R. Dept.....	879	9,638,711	1,041,485	10,680,196	1,065,864	2,502,708	131,024	4,889,078	84,949	419,404	9,067,373	2,230,257	31,000	1,916,305
Delaware, Lackawanna & Western.....	955	16,744,743	3,337,064	20,081,807	1,708,914	3,089,030	375,741	8,305,288	188,582	435,683	14,592,709	7,892,058	1,279,330	6,608,590
Denver & Rio Grande.....	2,578	8,850,994	1,571,110	10,422,104	1,178,251	2,025,430	199,979	3,573,803	142,515	330,962	7,444,372	3,693,843	453,000	3,240,225
Denver & Salt Lake.....	255	580,445	102,132	682,577	148,760	220,923	10,471	400,057	.....	25,936	806,147	99,084	41,250	140,343
Detroit & Mackinac.....	383	363,086	125,294	488,380	63,367	1,182,204	10,286	198,754	.....	18,543	409,154	117,460	40,065	77,013
Detroit & Toledo Shore Line.....	81	772,912	.....	772,912	39,264	48,789	8,687	242,463	.....	16,518	335,722	43,180	37,512	393,667
Detroit, Grand Haven & Milwaukee.....	191	939,000	207,500	1,146,500	168,196	2,032,353	26,449	831,003	244	29,481	1,238,727	84,923	18,100	66,211
Detroit, Toledo & Iron Range.....	441	915,331	56,676	972,007	105,132	149,447	21,240	625,373	.....	38,351	939,543	103,624	40,000	63,332
Duluth.....	270	1,144,587	104,895	1,249,482	396,655	343,726	6,727	511,838	7,770	56,245	1,322,960	12,737	70,263	83,001
Duluth, Missabe & Northern.....	414	1,720,594	156,594	1,877,188	204,959	544,518	16,291	667,380	6,542	135,449	2,075,140	34,884	106,102	140,986
Duluth, South Shore & Atlantic.....	600	1,203,245	357,875	1,561,120	206,864	2,215,550	36,339	730,708	20,233	33,513	1,359,207	296,389	90,000	206,374
Duluth, Winnipeg & Pacific.....	191	844,314	126,879	971,193	111,956	1,190,927	12,497	393,511	4,403	35,726	638,597	352,753	49,549	303,204
Elgin, Joliet & Eastern.....	801	5,797,446	1,000,100	6,797,546	624,814	1,709,127	40,767	2,233,007	.....	104,687	4,749,187	1,491,626	239,800	1,251,766

Operating mileage
during period.

Average mileage
operated during period.

Freight.

Passenger.

Inc. misc.

Total

Way and structures.

Maintenance of Equip.

Traffic.

Trans-
portation.

Miscellaneous.

General.

Total.

Net from railway operation.

Railway tax accruals.

Operating income (or loss).

Increase (or decrease) in income last year.

REVENUES AND EXPENSES OF RAILWAYS																
FIVE MONTHS OF CALENDAR YEAR 1917—Continued																
Average mileage operated during period.	Operating revenues				Total (inc. misc.)	Way and structures.	Maintenance of Equip.	Traffic.	Trans- portation.	Miscellaneous.	General.	Total.	Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decrease) in income last year.
	Freight.	Passenger.	Inc. misc.	Total												
4,766	\$25,398,143	\$6,270,958	\$34,439,985	\$4,404,560	\$6,938,772	\$550,483	\$11,209,381	\$228,960	\$821,491	\$24,055,321	\$10,384,664	\$2,445,796	\$7,932,345	\$2,445,796	\$7,932,345	\$7,932,345
109	3,327,063	1,001,210	4,667,237	225,351	732,590	14,764	1,088,010	26,904	47,607	1,477,398	538,687	189,639	1,037,728	1,037,728	1,037,728	1,037,728
1,159	1,043,591	188,942	1,302,512	638,295	732,590	13,800	1,840,729	118,880	142,258	3,438,390	1,228,847	84,525	205,647	205,647	205,647	205,647
1,177	442,459	78,660	1,302,512	185,958	377,493	13,800	299,684	13,800	36,886	1,012,686	289,826	25,500	45,647	45,647	45,647	45,647
466	3,871,249	615,972	4,878,389	498,448	672,567	125,249	1,514,029	4,002	169,732	2,968,082	1,910,308	233,296	1,654,952	1,654,952	1,654,952	1,654,952
755	2,871,249	615,972	4,878,389	498,448	672,567	125,249	1,514,029	4,002	169,732	2,968,082	1,910,308	233,296	1,654,952	1,654,952	1,654,952	1,654,952
24	2,873,696	261,910	3,292,661	38,496	62,580	65,357	1,308,750	4,002	169,732	2,968,082	1,910,308	233,296	1,654,952	1,654,952	1,654,952	1,654,952
900	909,578	18,650	910,725	341,489	544,636	7,585	335,931	7,585	47,607	1,477,398	538,687	189,639	1,037,728	1,037,728	1,037,728	1,037,728
97	1,319,937	7,048	1,384,358	176,945	224,557	12,076	418,329	12,076	169,732	2,968,082	1,910,308	233,296	1,654,952	1,654,952	1,654,952	1,654,952
296	1,943,937	1,695,192	20,322,732	2,291,009	3,741,484	428,796	9,169,052	74,599	478,622	16,172,905	4,149,827	822,500	3,326,593	3,326,593	3,326,593	3,326,593
1,442	16,943,217	3,087,793	5,374,430	552,873	758,355	13,800	1,840,729	118,880	142,258	3,438,390	1,228,847	84,525	205,647	205,647	205,647	205,647
1,397	1,741,328	1,292,943	5,082,533	109,854	101,672	15,114	1,487,473	15,114	18,134	4,249,571	1,357,760	293,529	1,064,111	1,064,111	1,064,111	1,064,111
1,354	3,367,612	1,87,350	5,082,533	109,854	101,672	15,114	1,487,473	15,114	18,134	4,249,571	1,357,760	293,529	1,064,111	1,064,111	1,064,111	1,064,111
1,154	452,754	127,905	907,531	137,723	118,538	40,109	9,689,697	40,109	662,093	273,202	24,865	2,597,049	8,552,441	8,552,441	8,552,441	8,552,441
302	719,023	127,905	907,531	137,723	118,538	40,109	9,689,697	40,109	662,093	273,202	24,865	2,597,049	8,552,441	8,552,441	8,552,441	8,552,441
342	719,023	127,905	907,531	137,723	118,538	40,109	9,689,697	40,109	662,093	273,202	24,865	2,597,049	8,552,441	8,552,441	8,552,441	8,552,441
208	943,999	355,467	1,382,691	3,006,209	5,542,561	123,711	1,231,711	123,711	1,075,766	227,142	159,525	1,937,884	1,937,884	1,937,884	1,937,884	1,937,884
5,070	21,748,328	5,815,694	29,612,876	117,419	90,677	90,677	1,487,473	15,114	18,134	4,249,571	1,357,760	293,529	1,064,111	1,064,111	1,064,111	1,064,111
200	632,464	170,616	5,607,331	1,187,732	1,187,732	118,538	3,741,484	118,538	1,075,766	227,142	159,525	1,937,884	1,937,884	1,937,884	1,937,884	1,937,884
1,216	3,882,819	4,463,443	20,594,917	2,189,708	3,148,061	1,937,884	1,937,884	1,937,884	1,937,884	1,937,884	1,937,884	1,937,884	1,937,884	1,937,884	1,937,884	1,937,884
1,862	13,817,103	4,463,443	20,594,917	2,189,708	3,148,061	1,937,884	1,937,884	1,937,884	1,937,884	1,937,884	1,937,884	1,937,884	1,937,884	1,937,884	1,937,884	1,937,884
385	805,757	224,341	1,075,766	107,466	462,467	244,146	1,937,884	244,146	90,145	8,915,764	81,642	323,381	8,817,825	8,817,825	8,817,825	8,817,825
120	469,545	693,196	4,203,420	600,487	1,359,611	1,359,611	1,359,611	1,359,611	1,359,611	1,359,611	1,359,611	1,359,611	1,359,611	1,359,611	1,359,611	1,359,611
1,647	9,211,375	2,432,527	12,697,974	1,579,485	1,01,577	3,198,598	3,198,598	3,198,598	3,198,598	3,198,598	3,198,598	3,198,598	3,198,598	3,198,598	3,198,598	3,198,598
4,228	9,211,375	2,432,527	12,697,974	1,579,485	1,01,577	3,198,598	3,198,598	3,198,598	3,198,598	3,198,598	3,198,598	3,198,598	3,198,598	3,198,598	3,198,598	3,198,598
365	379,926	157,015	579,485	101,577	101,577	101,577	101,577	101,577	101,577	101,577	101,577	101,577	101,577	101,577	101,577	101,577
3,865	11,310,648	3,635,665	16,173,721	3,139,987	3,139,987	3,139,987	3,139,987	3,139,987	3,139,987	3,139,987	3,139,987	3,139,987	3,139,987	3,139,987	3,139,987	3,139,987
3,865	11,310,648	3,635,665	16,173,721	3,139,987	3,139,987	3,139,987	3,139,987	3,139,987	3,139,987	3,139,987	3,139,987	3,139,987	3,139,987	3,139,987	3,139,987	3,139,987
332	619,080	104,348	756,509	99,350	132,806	132,806	132,806	132,806	132,806	132,806	132,806	132,806	132,806	132,806	132,806	132,806
134	112,695	1,987,395	13,900,182	2,149,515	2,149,515	2,149,515	2,149,515	2,149,515	2,149,515	2,149,515	2,149,515	2,149,515	2,149,515	2,149,515	2,149,515	2,149,515
3,822	10,775,466	583,031	5,407,766	142,566	69,078	69,078	69,078	69,078	69,078	69,078	69,078	69,078	69,078	69,078	69,078	69,078
1,160	4,326,261	55,407	849,962	272,093	1,213,419	283,302	2,273,603	283,302	2,273,603	283,302	2,273,603	283,302	2,273,603	283,302	2,273,603	283,302
108	786,753	55,407	849,962	272,093	1,213,419	283,302	2,273,603	283,302	2,273,603	283,302	2,273,603	283,302	2,273,603	283,302	2,273,603	283,302
6	1,876,896	568,729	2,924,048	606,002	94,480	54,714	593,741	54,714	593,741	54,714	593,741	54,714	593,741	54,714	593,741	54,714
401	4,190,334	1,239,447	5,975,410	962,466	962,466	962,466	962,466	962,466	962,466	962,466	962,466	962,466	962,466	962,466	962,466	962,466
1,237	4,190,334	1,239,447	5,975,410	962,466	962,466	962,466	962,466	962,466	962,466	962,466	962,466	962,466	962,466	962,466	962,466	962,466
165	874,340	279,176	1,879,049	174,083	333,771	174,083	333,771	174,083	333,771	174,083	333,771	174,083	333,771	174,083	333,771	174,083
204	1,399,813	111,745	559,266	93,445	180,108	180,108	180,108	180,108	180,108	180,108	180,108	180,108	180,108	180,108	180,108	180,108
285	486,141	115,783	659,699	9,212,233	17,088,716	1,249,736	3,462,127	3,462,127	3,462,127	3,462,127	3,462,127	3,462,127	3,462,127	3,462,127	3,462,127	3,462,127
191	422,432	90,917	90,917	9,212,233	17,088,716	1,249,736	3,462,127	3,462,127	3,462,127	3,462,127	3,462,127	3,462,127	3,462,127	3,462,127	3,462,127	3,462,127
191	422,432	90,917	90,917	9,212,233	17,088,716	1,249,736	3,462,127	3,462,127	3,462,127	3,462,127	3,462,127	3,462,127	3,462,127	3,462,127	3,462,127	3,462,127
6,083	57,544,580	435,680	6,700,826	5,143,412	1,001,381	1,001,381	1,001,381	1,001,381	1,001,381	1,001,381	1,001,381	1,001,381	1,001,381	1,001,381	1,001,381	1,001,381
571	5,968,598	435,680	6,700,826	5,143,412	1,001,381	1,001,381	1,001,381	1,001,381	1,001,381	1,001,381	1,001,381	1,001,381	1,001,381	1,001,381	1,001,381	1,001,381
1,992	16,880,965	12,633,524	33,745,624	3,116,471	4,519,185	201,216	1,456,747	1,456,747	1,456,747	1,456,747	1,456,747	1,456,747	1,456,747	1,456,747	1,456,747	1,456,747
1,992	16,880,965	12,633,524	33,745,624	3,116,471	4,519,185	201,216	1,456,747	1,456,747	1,456,747	1,456,747	1,456,747	1,456,747	1,456,747	1,456,747	1,456,747	1,456,747
568	2,358,866	415,099	3,304,919	342,788	399,573	399,573	399,573	399,573	399,573	399,573	399,573	399,573	399,573	399,573	399,573	399,573
112	1,530,334	231,565	1,943,102	235,788	163,479	163,479										

REVENUES AND EXPENSES OF RAILWAYS

FIVE MONTHS OF CALENDAR YEAR, 1917—CONTINUED

Name of road.	Average mileage operated during period.	Operating revenues				Operating expenses				Net from railway operation.	Railway tax accruals.	Operating income (or loss).	Increase (or decr.) comp. with last year.
		Freight.	Passenger.	Total (inc. misc.)	Maintenance of way and structures.	Equip-ment.	Traffic.	Trans- portation.	Miscel- laneous.				
St. Louis, San Francisco & Texas.....	244	\$314,573	\$126,505	\$481,078	77,544	\$89,784	\$10,897	\$237,264	\$31,118	\$446,608	\$7,456	\$28,828	\$38,603
St. Louis Southwestern.....	943	3,708,828	667,010	4,375,838	384,919	765,618	160,043	1,085,572	135,192	2,542,230	183,139	1,877,524	709,047
St. Louis Southwestern of Texas.....	811	1,496,248	397,255	2,051,755	346,278	547,030	71,272	905,286	5,465	1,972,514	91,062	11,971	123,333
San Antonio & Aransas Pass.....	726	1,020,136	335,529	1,355,665	345,174	261,763	35,149	766,503	71,257	1,476,446	75,000	74,914	8,261
Seaboard.....	3,461	8,704,296	2,776,554	12,771,168	1,322,264	1,967,581	405,918	4,635,182	100,704	8,752,571	542,489	3,471,867	47,502
Southern.....	6,983	23,497,693	7,615,018	34,310,874	3,879,007	5,448,337	860,051	11,970,130	248,367	23,115,157	1,494,410	9,626,195	441,207
Southern in Mississippi.....	281	286,536	140,838	427,374	110,902	46,311	11,323	211,789	22,739	403,125	49,353	20,191	1,054
Southern Pacific.....	7,074	36,984,992	12,615,083	54,283,345	5,652,887	7,615,184	891,340	19,616,419	850,809	18,426,855	2,744,514	15,682,976	3,192,220
Spokane, Portland & Seattle.....	555	1,736,134	560,614	2,464,647	212,656	212,656	37,356	555,824	1,292	1,799,354	289,790	995,144	540,153
Tennessee Central.....	295	506,583	194,172	710,130	113,282	113,282	24,576	264,921	.....	547,863	24,000	138,251	26,222
Terminal R. R. Ass'n. of St. Louis.....	37	.....	2,015	2,015	141,495	88,270	4,908	463,860	10,923	728,200	161,383	535,684	91,811
Texas & New Orleans.....	468	1,729,825	544,707	2,474,532	249,059	397,472	46,236	793,224	54,975	1,597,577	105,927	771,305	507,119
Texas & Pacific.....	1,947	5,912,261	2,245,962	8,782,739	1,014,879	1,109,610	202,329	3,700,141	62,234	6,355,571	405,000	2,017,126	519,650
Toledo & Ohio Central.....	436	2,297,760	236,887	2,666,531	393,415	553,419	36,154	1,213,174	8,666	2,258,144	124,961	283,436	56,367
Toledo, Peoria & Western.....	248	302,649	169,663	505,214	88,492	137,518	12,117	202,023	.....	464,077	37,500	3,637	8,769
Toledo, St. Louis & Western.....	455	2,428,794	146,736	2,703,664	436,780	429,499	89,796	969,730	.....	1,972,201	73,462	633,739	120,485
Trinity & Brazos Valley.....	369	305,588	46,778	398,312	129,508	184,923	13,883	207,066	.....	185,230	25,800	21,007	69,072
Ulster & Delaware.....	129	172,615	65,774	238,389	43,584	58,517	7,181	159,982	1,837	178,101	20,000	21,145	53,457
Union Pacific.....	3,622	20,066,607	4,521,733	27,328,007	3,703,084	3,780,205	583,429	8,440,165	540,025	17,818,487	1,745,000	7,762,869	2,178,795
Union R. R. of Baltimore.....	8	682,291	159,571	852,976	45,090	.....	.....	34,591	.....	90,786	762,190	711,575	58,977
Union R. R. of Penna.....	35	.....	.....	.....	202,853	707,357	635	1,161,581	.....	2,100,581	36,677	99,098	95,329
Vicksburg, Shreveport & Pacific.....	171	515,387	209,576	724,963	89,440	148,135	23,551	261,856	8,878	559,428	53,525	216,636	72,356
Virginian.....	513	3,744,047	185,492	4,154,065	314,596	619,205	28,902	1,181,875	80,260	2,300,123	180,000	1,673,919	104,151
Wabash.....	2,519	11,797,679	2,746,807	15,901,619	1,495,324	2,113,442	473,310	6,674,931	90,629	11,216,964	4,684,655	511,016	4,171,632
Washington Southern.....	36	331,088	424,737	755,825	68,514	104,412	7,831	320,542	10,076	530,531	444,898	29,399	415,475
West Jersey & Seashore.....	359	1,080,983	1,501,681	2,582,664	591,857	474,025	54,737	1,363,612	18,744	2,593,042	234,842	27,650	101,618
Western Maryland.....	775	4,476,949	378,578	5,212,370	579,828	980,209	109,219	1,924,888	142,092	3,789,666	182,500	1,245,204	186,420
Western Railway of Alabama.....	133	348,381	210,511	624,443	77,172	127,775	33,663	203,392	10,955	475,975	30,491	117,956	17,552
Western Pacific.....	958	2,866,701	503,599	3,344,444	550,690	357,922	100,786	1,075,576	3,703	2,217,282	201,539	1,125,569	348,869
Wheeling & Lake Erie.....	512	3,046,540	258,451	3,614,949	463,544	579,540	41,263	1,362,983	8,444	2,551,642	216,055	1,842,938	416,310
Yazoo & Mississippi Valley.....	1,382	5,093,503	1,255,840	6,758,445	1,169,140	1,120,912	107,004	2,240,680	11,754	4,803,797	522,849	1,428,235	112,861

Traffic News

The Railway Commissioners of Canada have granted the request of the railways for an increase on both through and local grain rates from Fort William eastward, and also have made an advance in lake and rail rates.

The International railroad bridge at Brownsville, Tex., is soon to be re-opened for through passenger and freight traffic. As at other frontier points, the freight cars and passenger coaches of the United States railroads will be permitted to go only across the river (to Matamoros), and will not be allowed to proceed further into Mexico.

Attorney General B. F. Looney, of the state of Texas, has filed in the District Court, at Austin, suits against 66 railroads to restrain them from charging differential freight rates on goods moving for distances less than 351 miles between points within Texas. The hearing of the case has been set for July 30. It is alleged by the attorney general that the railroads have not properly construed the order of the Interstate Commerce Commission in the Shreveport case, with respect to differential rates, and that the carriers have been charging rates that are not authorized in that order.

The Montana Railroad and Public Service Commission and the Corporation Commission of Oklahoma issued orders on July 5 and 10, respectively, providing for demurrage rates applicable to intrastate traffic identical with the rates now in force covering interstate traffic. The Oklahoma commission also reduced from 72 hours to 48 hours the free time allowed on cotton at interior presses for compression in transit, carload freight consigned to consignees located more than five miles from a railroad station and carload shipments weighing in excess of 66,000 lb. The Corporation Commission of Oklahoma is the first western commission to shorten the free time on these kinds of traffic.

The express companies doing business in Chicago will on July 31 discontinue the vehicle pick-up of business after 5 p. m. Among the reasons assigned for this action are the great volume of business, which comes to the express companies at and near the close of the day, thereby precluding the possibility of efficient handling; the unusually heavy volume of traffic which has been moving through express channels during the past year, and the program inaugurated by the railroads, under the direction of the Railroads' War Board, contemplating substantial curtailments of passenger train service. This plan is already in successful operation in several important cities, including New York. In order that an avenue may be afforded for expediting emergency shipments which may not be ready for forwarding at 5 p. m., all local offices of the company in Chicago will be open for the receipt of matter up to 6 p. m., and arrangements have been made for the prompt handling of goods brought in after 5 o'clock. In addition, those offices now receiving express matter at all hours of the day and night will be continued. The companies which have joined in adopting the new rule are the Adams, the American, the Great Northern, the National, the Northern, the Wells-Fargo, and the Western.

A. C. L. Food Preparedness Campaign

In response to the request of the Department of Agriculture the Atlantic Coast Line has posted at its stations a poster entitled "Plant Corn." The poster calls attention to the estimated inadequate production of wheat this year, and says: "Plant corn on all suitable land not used for other food or feed crops. If early planting has failed, replant wherever there is a chance for a crop."

The Atlantic Coast Line has also sent circulars to all cottonseed oil mills in Virginia, North Carolina and South Carolina, urging them to grind peanuts and soy beans in addition to cottonseed. This letter points to the success of Texas cottonseed oil mills, which have produced oil from peanuts and soy beans, and calls attention to the fact that it is necessary in many sections of the South to encourage the planting of those crops as

a preliminary step towards defeating the ravages of the boll weevil.

In a recent letter to chambers of commerce in Virginia, North and South Carolina, the Atlantic Coast Line urges bankers and business men to make arrangements to grant farmers advances on their crops. There is some fear on the part of the farmers that if they greatly increase their acreage of food crops the speculator will take advantage of the fact that they have to sell in the fall.

Further Train Service Reductions in the Middle West

The Cincinnati, Hamilton & Dayton recently discontinued two trains between Cincinnati, Ohio, and Dayton; two between Cincinnati and Glendale; two between Cincinnati and Hamilton, and two between Dayton and Lima, aggregating 8,885 train-miles per month. The Pere Marquette on July 17, discontinued ten trains on the Chicago division and four on the Elk Rapids (Mich.) branch, and substituted every-other-day instead of daily, except Sunday, service on two other branch lines. On the Toledo division it eliminated eight trains and inaugurated every-other-day service on two branches instead of six days a week. On the Detroit division it abandoned two daily trains and discontinued Sunday service for two other trains. On the Port Huron-Grand Rapids division four trains were discontinued on July 17, four other trains having been eliminated on May 1. Every-other-day week-day service was substituted for six days a week on two branch lines of this division, effective May 1.

Coal Movement to New England

The New York, New Haven & Hartford reports a large increase in the movement of coal from the mines to points on its lines by rail all the way; this as a result of the high rates by water from New York and other coal shipping ports. The receipts at the New Haven road's stations for the month of May and June (number of carloads) are as below:

	1917		1916	
	All Rail	Total	All Rail	Total
May	17,168	21,850	.....	15,546
June	15,974	20,707	.....	17,466
Average per month for 6 months.....	13,213	.....	12,377	.....

There is still a considerable movement of coal to New England ports by water. The falling off in this movement has been more than made up by the increase in all-rail shipments.

State Commission Urges Full Car Loading

The Public Service Commission of Washington has issued an open letter, addressed to shippers and railroads in that state, citing the appeal of the Railroads' War Board for the fullest use of all railroad equipment, and explaining the duty of state commissions and intrastate shippers to acquiesce in the plans of the national government, and says:

"Therefore, we insist and direct that all railroad equipment be loaded to its fullest carrying capacity, regardless of minimum, save in such cases as the commodity shipped would be damaged thereby; and we invite the railroads to rearrange their minimums in this state, the same to be in effect during the period of the present war, unless sooner revoked by order of this commission."

Long Island Holiday Traffic

General Manager J. A. McCrea, of the Long Island, reports the average delay to passenger trains on that road for the Fourth-of-July holiday period (five days) as 2 minutes 36 seconds; and the average delay to each train that was late was 7 minutes 7 seconds. Total number of trains, 3,965; number on time, 2,041. The statement gives the following data for the holiday period in this and preceding years:

	1910	1915	1916	1917
Passenger train movements.....	4,253	5,015	5,361	4,897
Passenger car movements.....	18,502	29,733	27,321	24,094
Baggage car movements	1,103	1,369	1,508	1,382
Freight and work train movements...	430	374	411	356
Freight car movements.....	9,867	7,939	8,986	8,124
Passengers carried on trains.....	686,727	917,917	1,029,721	1,023,265
Carloads of express and baggage moved	421	780	1,077	977

The average delay to passenger trains for nine years has been: 1909, 2 min. 22 sec.; 1910, 2 min. 35 sec.; 1911, 3 min. 5 sec.; 1912,

1 min. 44 sec.; 1913, 3 min. 52 sec.; 1914, 3 min. 3 sec.; 1915, 2 min. 45 sec.; 1916, 4 min. 33 sec.; 1917, 2 min. 36 sec.

There were no personal injuries or train accidents.

Excellent Record in Car Conservation

During the month of June the R. T. Crane Company, Chicago, handled 410 cars on the Chicago River & Indiana tracks at Corwith yards, Chicago, with an average detention of only 1.46 days. Out of the 410 cars, 311 were released within the first 24 hours, 44 within the first 48 hours, 33 within 72 hours, 13 within 96 hours, 7 within 120 hours and 2 within 144 hours.

Getting the Passenger's Point of View

Charles S. Fee, passenger traffic manager of the Southern Pacific, is distributing to passengers as they come on the Southern Pacific lines at Ogden, Utah; Portland, Ore., and El Paso, Tex., post cards upon which they are invited to write comments and suggestions relative to the service. The card explains the company's purpose to maintain uniformly high standards, and says: "We are anxious to know how you enjoyed your trip—what scenic points appealed most to you—what feature of Southern Pacific service impressed you—how our trains and service compare with those of other roads. . . . We shall be glad to plan itineraries for you. If you have friends who would like travel information, give us their names. . . . After writing your comments please hand this card to the conductor before leaving train, or mail it from your destination."

Shippers Urged to Reduce Switching Requirements

The National Automobile Chamber of Commerce, New York City, has issued a circular to members of the chamber, offering suggestions looking to conservation of transportation resources in every possible way. At three large plants during the past month the loading of automobiles into cars has been managed so as to test the possibility of reducing the number of switching "cuts" required to place in trains the outbound loads; and it is found that a very considerable amount of time and engine power can be saved. The circular gives the following example of indiscriminate loading:

Car Number	Destination	Direction for train movement
CMPS 207385	Lewiston, Idaho	West
MC 90372	Hartford, Conn.	East
MC 88845	Kansas City, Mo.	West
MC 92458	Boston, Mass.	East
NYC 236434	Chattanooga, Tenn.	South
NYC 251558	Philadelphia, Pa.	East
CRI&P 60613	El Paso, Texas.	West
MC 95504	Cincinnati, Ohio	South
MC 87584	New York	East
Sou 160208	Atlanta, Ga.	South

The same cars and the same shipments could be loaded as follows:

Car Number	Destination	Direction for train movement
CMPS 207385	Lewiston, Idaho	West
MC 90372	Kansas City, Mo.	West
MC 88845	New York	East
MC 92458	Hartford, Conn.	East
NYC 236434	Boston, Mass.	East
NYC 251558	Philadelphia, Pa.	East
CRI&P 60613	El Paso, Texas.	West
MC 95504	Cincinnati, Ohio	South
MC 87584	Chattanooga, Tenn.	South
Sou 160208	Atlanta, Ga.	South

The circular, signed by J. S. Marvin, manager of the traffic department, asks all members to adopt the plan of getting from the loading dock a list of car numbers and initials in the order in which the railroad places the cars. By comparing this with the loads to go forward it will be found that loads for the West, East and South can be grouped together to a considerable extent, as shown in the above example. Cars can thus often be classified for road movement by two or three shifts, where, under ordinary practice, they would have to go to classification yards for sorting.

"The automobile industry has done much to relieve the carriers during the prevailing crisis, as compared with the normal manner of shipping automobiles. This is what we and all other shippers should do. The suggestion herein goes a step further, and we trust it will be put into effect at once. You can frequently go further and keep all east-bound shipments out of a string of cars like this, assigning westbound loads to all cars standing between western owned cars."

Commission and Court News

INTERSTATE COMMERCE COMMISSION

The Fifteen Per Cent Case

In allowing the southern and western roads an advance of 15 cents a ton in their rates on coal and coke in connection with the 15 per cent case, the Interstate Commerce Commission said that if some of the rates authorized to be increased were held by unexpired orders of the commission, the carriers might apply for modification of such orders. On July 23 the commission entered an order in 41 coal rate cases, on application of the roads, modifying the previous orders to permit an advance of not more than 15 cents a ton above the rates prescribed, effective on August 4, with the condition that if the relationships prescribed are thereby disturbed, the carriers shall restore the prescribed relationship within 90 days. The advanced class rates in Official Classification territory, allowed by the commission in its discussion in the 15 per cent case, went into effect on July 16, and later dates on five days' notice.

STATE COMMISSIONS

The Railroad Commission of Louisiana, in an order dated July 19, has denied the application of the railroads in that state for authority to make a general advance of 15 per cent in freight rates, holding that the proposition has not been justified. The report of the commission begins with the declaration that the railroads have called upon the commission to "issue them an insurance policy at the rate of 15 per cent above all of their existing freight rates, to secure them against contemplated diminutions in their revenue, during an indefinite period, in order that they may meet what they have termed an emergency." The testimony presented by the railroads as to the emergency is held by the commission to be not at all clear. Gross receipts have improved, and the commission believes that unsatisfactory net earnings on some of the smaller roads have been due to inability to get cars. It is not believed that the 15 per cent advance in freight rates will in any way affect the ability of the railroads to serve the government properly. Conditions are declared to be very prosperous over the entire state. The Interstate Commerce Commission has refused to allow the advance in interstate rates, and as the application for an increase in Louisiana was based largely on the expectation of authority to increase interstate rates, it is decided to allow no advance.

PERSONNEL OF COMMISSIONS

Henry W. Hodge, appointed a bridge engineer to go with the army to France, has resigned his place as member of the New York State Public Service Commission for the First district.

COURT NEWS

Storage Charges on Goods Delivered to Steamship

The Massachusetts Supreme Judicial Court holds that where a railroad has transported to the seaboard goods to be delivered by it to a steamship to be carried to a foreign port, and those goods, as against the shipper, are subject to storage charges for which the railroad has a lien, an implied contract arises whereby the steamship company assumes responsibility for the charges on the goods received by it.

Goods so transported were subject to storage charges, for which the railroad had a lien, and which it was bound to collect. The railroad wrote the steamship company that it was obliged to collect the charges in accordance with the tariff, and if the goods were taken forward by the steamship company the railroad would hold it responsible for the payment of such charges. The steamship company replied requesting a copy of the tariff. This was sent, and thereafter the steamer accepted certain of the goods. It was held that, as a matter of law, an implied contract was made by the steamship company to assume responsi-

bility for the charges on the goods so taken.—*Boston & Maine v. Oceanic Steam Nav. Co. (Mass.)*, 116 N. E., 260. Decided May 23, 1917.

Rate Discrimination

The Massachusetts Supreme Judicial Court holds that the Public Service Commission cannot, under section 24 of the Public Utilities Act, authorizing it, upon finding a carrier's rates to be unduly discriminatory, to determine reasonable rates, require a railroad to eliminate an alleged discrimination by absorbing switching rates, where there is no finding that the resulting rate would be reasonable, and an injunction prevents discontinuance of the alleged preferential switching absorption rate.—*National Dock & S. W. Co. v. Boston & Maine (Mass.)*, 116 S. E., 544. Decided May 29, 1917.

Demurrage or Storage Charges

The Kilby Car & Foundry Company shipped to its own order its cars over the L. & N. and a connecting road. The cars were not sold as anticipated, and were left on the tracks of the connecting carrier for some time, when they were ordered returned. On return the L. & N. paid the connecting carrier demurrage or storage charges, which it afterwards sought to recover from the car company. The connecting carrier's tariff of storage charges filed with the Interstate Commerce Commission provided that freight, except company material, received for delivery or held for forwarding directions, stored in or on railroad premises, is subject to storage regulations as follows: (a) For unloaded freight not removed within 48 hours; (b) carload freight placed on delivery tracks and subsequently unloaded is subject to demurrage rules while in cars, and to storage rules after unloading; (c) for unloaded freight upon which free time allowed has expired while in cars; (d) for freight received if held more than 48 hours after receipt. The Alabama Supreme Court holds that the demurrage or storage charges advanced by the L. & N. to the connecting carrier could not be recovered from the shipper, as the schedule filed was not applicable to demurrage or storage charges on cars standing on their own wheels on side tracks.—*L. & N. v. Kilby C. & F. Co. (Ala.)*, 75 So., 394. Decided April 26, 1917.

Cannot Suspend Rates Below Commission Maximum

The Illinois Railroad and Warehouse Commission was by statute authorized to fix reasonable maximum rates and charges for the transportation of persons or property by rail; to investigate and ascertain whether the provisions of the act were violated and cause suits to be commenced and prosecuted against any railroad companies which might violate the provisions of the act. The act declared that the commissioners should make for each common carrier doing business in the state a schedule of reasonable maximum rates for the intrastate transportation of property which should be deemed prima facie reasonable. In 1913 the railroads filed with both the Interstate Commerce Commission and the Railroad and Warehouse Commission grain tariffs advancing rates above those previously charged an average of about one cent per 100 lb. The rates were suspended by the state commission; and its successor, the Public Utilities Commission, after hearings, disapproved the advances. The Interstate Commerce Commission approved the same advances, as applied to interstate commerce, and these went into effect on January 8, 1914. The state commission in 1906 established maximum reasonable rates governing the transportation of grain, which were higher than those now filed by the carriers. The Illinois Supreme Court holds that, as the powers of the commission were strictly circumscribed by the statute, it had no power on protests of shippers to suspend tariffs filed by the railroads which were less than the maximum rates fixed by the commission. Nor could the Public Utilities Commission, on coming into being, suspend such rates until a determination was made of their property. The petition of the protestants was treated as a protest against the rates filed, and no change would be made in those now charged until the final order of the commission is made. The district court was directed to set aside the order of the commission, and to direct the commission to further proceed with the case in accordance with these views.—*State Public Utilities Commission v. A. T. & S. F. (Ill.)*, 115 N. E., 904. Decided April 10, 1917.

Federal Employers' Liability Act

The Alabama Supreme Court holds that a car repairer injured while working on a car used the previous week in interstate commerce, but which had "drifted" for a week and was not again used, except in intrastate commerce, for several weeks after the injury, could not recover of the railroad under the act.—*Loveless v. L. & N. (Ala.)*, 75 So., 7.

The Circuit Court of Appeals, Fourth Circuit, holds that a trackman, engaged in assisting a surveyor in a survey made to improve the curve in a track used in interstate commerce, is within the act.—*Southern v. McGuin*, 240 Fed., 649.

The Alabama Supreme Court holds that a railroad employee engaged in clearing out ditches along the railroad's main line, which was used for interstate commerce, was engaged in interstate commerce.—*Louisville & Nashville v. Blankenship (Ala.)*, 74 So., 960.

The Kentucky Court of Appeals holds that a railroad employee injured while painting a bridge used for interstate commerce was within the act.—*L. & N. v. Netherton (Ky.)*, 192 S. W., 1,035.

A railroad lying wholly within a state, forming a link between interstate carriers, transported both interstate and intrastate freight and passengers, commingled, and the several engines of the road were indiscriminately used in both kinds of service. The Circuit Court of Appeals, Sixth Circuit, holds that an engine devoted to such purposes was an instrumentality of interstate commerce, and one injured in repairing it might sue under the act.—*Chicago, Kalamazoo & Saginaw*, 234 Fed., 1.

Where a brakeman, who was a member of a train crew engaged indiscriminately in handling interstate and intrastate freight, was injured while going from his caboose, which was awaiting assignment to the yard office for supplies for the caboose, the Montana Supreme Court holds that he was not then employed in interstate commerce. It was immaterial that the work had to do with interstate commerce to a greater extent than purely intrastate shipments.—*McBain v. Northern Pacific (Mont.)*, 160 Pac., 654.

The Supreme Court of the State of Washington holds that an employee, injured while building a scaffold to be used by him in painting a freight shed, which is used by a railroad as an instrumentality in interstate commerce, is not engaged in an act so directly and immediately connected with interstate commerce as substantially to form a part or necessary incident thereto, and his injury is therefore not compensatable under the Federal statute.—*Killes v. Great Northern (Wash.)*, 161 Pac., 69.

The California Supreme Court holds that a gateman, in the employ of a railroad using its tracks indiscriminately for both interstate and intrastate commerce, killed by an intrastate train when he started to cross the track to back away a horse and wagon which had come within the range of one of the gates so that he could not lower it, was "engaged in interstate commerce," so that the State Industrial Accident Commission was without jurisdiction to make any award.—*Southern Pacific v. Industrial Accident Commission (Cal.)*, 161 Pac., 1,139.

The Wisconsin Supreme Court holds that a janitor in an interstate railroad's general office in a town, who was struck in the eye with a small splinter flying off when he was breaking up coal for the furnace with an ax, was not engaged in interstate commerce when injured.—*Great Northern v. King (Wis.)*, 161 N. W., 371.

The Circuit Court of Appeals, Second Circuit, holds that a car repairer, employed by an interstate carrier, who was injured while working on a car belonging to another interstate carrier, and which must be returned in interstate commerce, was not engaged in interstate commerce within the act, the car not being then so engaged.—*Central of New Jersey v. Paslick*, 239 Fed., 713.

The Circuit Court of Appeals, Second Circuit, holds that an employee of a carrier, practically all of whose business was interstate commerce, was not engaged in interstate commerce while placing rails in a pit.—*Hudson & Manhattan v. Ioris*, 239 Fed., 855.

The Colorado Supreme Court holds that an employee wrecker or car repairer of a railroad engaged in both intra- and interstate commerce, who was killed while clearing a wreck, was engaged in interstate commerce.—*Denver & R. G. v. Wilson (Colo.)*, 163 Pac., 857.

Equipment and Supplies

LOCOMOTIVES

THE CHICAGO & ALTON is reported in the market for 5 additional Mikado locomotives.

UNITED STATES GOVERNMENT.—As the *Railway Age Gazette* was the first to report last week, the United States Government has ordered 150 80-ton Consolidation locomotives from the American Locomotive Company, and 150 from the Baldwin Locomotive Works. These engines are for the service of the American forces in France, and will be given, it is understood, priority over all other business. The locomotives are of standard gage. The 150 to be built by the Baldwin Locomotive Works will be similar to the British Government Consolidation locomotives now on order or recently built by that company. An illustration of one of these locomotives appeared in the Patriotic War Number of the *Railway Age Gazette*, June 22, page 1465. The 150 locomotives to be built by the American Locomotive Company will be built to the same designs as the locomotives now on order for the French State Railways.

FREIGHT CARS

THE ALABAMA & VICKSBURG is inquiring for 30 to 40 30-ton steel center sill stock cars.

THE SEMET-SOLVAY COMPANY, Syracuse, N. Y., is in the market for 100 hopper cars.

THE ATCHISON, TOPEKA & SANTA FE has ordered 100 ore cars from the Pullman Company.

THE REPUBLIC IRON & STEEL COMPANY is reported in the market for 50 coke and 50 gondola cars.

THE NEW YORK, NEW HAVEN & HARTFORD is inquiring for 50 refrigerator cars, 25 for freight and 25 for passenger train service.

THE HUDSON BAY COMPANY has given an order to American car builders for 1,200 steel gondola cars, to be shipped to the Dutch East Indies.

PASSENGER CARS

THE LONG ISLAND is asking prices on 25 passenger and baggage cars and 40 coaches.

BRITISH LOCOMOTIVES IN WAR GARB.—The latest locomotives built at Crewe, England, are finished in the "all-black" style adopted as a war time finish in which considerable economy is effected by dispensing with lining out and other decorative work. The engines present a striking appearance in this garb.

LOAN TO BOLIVIA FOR RAILROAD CONSTRUCTION.—Proceeds of the \$2,400,000 issue of 6 per cent bonds purchased by a group of banking houses, consisting of the Equitable Trust Company, Chandler & Co., Inc., and Counselman & Co., of Chicago, are to be used in the construction of a railroad from La Paz, the principal city of Bolivia, into the Yungas Valley. The orders for the materials necessary for the building of the railroad are to be placed in this country. Bolivia entered this market for funds as early as last March. Negotiations for a loan were completed soon after, but a public offering of the issue was delayed until the Liberty Loan had been sold. The Department of State has expressed its satisfaction over the fact that the South American republic was successful in negotiating a loan in the United States, Secretary of State Lansing having written a letter to this effect on May 11, 1917, to the Hon. Ignacio Calderon, the Bolivian minister here. The negotiations on behalf of Bolivia were conducted by the Hon. Adolfo Ballivian, consul general in the United States. Chandler & Co. are the fiscal agents for Bolivia in this country.

Supply Trade News

A. D. Bruce, in charge of purchases and supplies for the Vapor Car Heating Company, Inc., Chicago, has been elected secretary and controller, succeeding Arthur P. Harper, resigned.

H. G. Doran & Co., Peoples Gas building, Chicago, have been appointed selling agents for the Schaefer Equipment Company, Pittsburgh, Pa., manufacturers of the Schaefer truck lever connections.

W. J. Gillingham, who has been identified with the Hall Switch & Signal Company since 1900, successively as general agent, resident manager, and general sales manager, has been elected vice-president of that company, with headquarters in New York.

Roland C. Fraser, vice-president of the Buffalo Brake Beam Company, whose death at Suffern, N. Y., on June 17 was noted in these columns last week, was born at Boston, Mass., April 11, 1865.



R. C. Fraser

Mr. Fraser was widely known in the supply trade. He began his business career in the railway supply field by joining the business staff of the *Railroad Gazette* in 1890. After several years' service in that position he was employed, successively, by the Monarch Brake Beam Company, of Detroit; the U. S. Metal & Manufacturing Company, of New York, and the Buffalo Brake Beam Company, of New York. At the time of his death he was vice-president of the last named company and had been in its service for 14 years.

At a meeting of the executive committee of the board of directors of the American Locomotive Company, held July 18, David Van Alstyne was appointed an assistant vice-president, in charge of manufacture, effective July 1, 1917. Mr. Van Alstyne has hitherto held the title of assistant to vice-president.

Aall & Co., of Tokyo, the Japanese agents for the American Steel Export Company, have added B. Orum Andresen to their engineering staff. Mr. Andresen, prior to leaving for Japan, spent several days acquainting himself with the organization and the facilities the American Steel Export Company has for export engineering and contracting.

The C. F. Massey Company, Chicago, placed additional factories in operation at Youngstown, Ohio, and at Los Angeles, Cal., on July 1, making 13 plants now in service. C. Hunsacker has been transferred to Youngstown and placed in charge of the plant at that place, while N. R. Brown, formerly with the Lehigh Portland Cement Company, has assumed charge of the plant at Los Angeles.

Among those in the service of the American Steel Export Company, New York, who have been called to the colors, is K. G. Martin, manager of the service and publicity departments. Mr. Martin was granted an honorable discharge from the 22nd Regiment, Corps of Engineers, N. G., N. Y., in order to be able to accept a commission as captain, Officers' Reserve Corps, Motor Transport Service.

The Walls Frogless Switch & Manufacturing Company, Kansas City, Mo., has leased a building at Twenty-third and Broadway, Kansas City, where it will manufacture the Walls Frogless switch. The device eliminates the old style point frogs and slip switches, and provides for a straight rail at all times. It is ex-

pected that the factory will be in operation by September 1. W. J. Stone Burner has been appointed general manager of the company, with headquarters at Kansas City, Mo., and C. E. Ennis has been appointed assistant secretary.

Seven Chicago railway supply companies recently made a gift of \$385 to the Thirteenth Engineers, United States army, the railway regiment recently quartered at Chicago, and formerly known as the Third Reserve Engineers. Of this amount, \$85 was used to cover the expenses of a band, which furnished music during a review of the regiment on July 12, and the remaining \$300 will be used to provide greater comforts for the men. The companies which contributed to the fund were the P & M Company, Robert W. Hunt & Co., the Railroad Supply Company; Fairbanks, Morse & Co.; the Rail Joint Company, the Galena-Signal Oil Company, and Pratt & Lambert.

The Automatic Straight Air Brake Company

The Automatic Straight Air Brake Company of New York during the next few weeks will send out invitations to many of the leading railroad officers of the country to witness the operation of the automatic straight air brake, on a 100-car test rack at New York, and shortly thereafter to attend the road service trials, which will be conducted by the Division of Safety of the Interstate Commerce Commission.

The company has leased a building in which it has installed a 100-car test rack, which includes the complete car equipment arranged with full length train line and all other piping, just as it would be applied on a 100-car train. The apparatus for each car includes a trainagraph with three recording pens indicating respectively the pressure of the brake cylinder, the auxiliary reservoir and the train line. An observer can thus see at a glance just what takes place on each car in the train.

During the fall of 1915 this brake was tested in road service on the Atchison, Topeka & Santa Fe, under the supervision of the Division of Safety of the Interstate Commerce Commission, and since that time the improvements suggested by the commission in its report to Congress in June, 1916, have been made in the equipment. The principal features of the brake are the use of wing valves, the movement of which is controlled by diaphragms under the action of differential pressures and the use of train pipe air for the service application of the brake, making possible the maintenance of a predetermined brake cylinder pressure indefinitely without the necessity of the release and reapplication of the brakes, and without the aid of retaining valves.

TRADE PUBLICATIONS

CRANES.—Catalogue No. 130, recently issued by the Whiting Foundry Equipment Company, Harvey, Ill., is an attractive and well illustrated book, 8½ in. by 11 in. in size, descriptive of the line of Whiting cranes. The catalogue gives illustrations and descriptions of a large number of cranes of different types, and shows views of typical installations. Many of the cranes given are for special use on railroads, as, for example, at ash pits, for transfer service, for handling freight and in locomotive shops.

ACORN DIES AND HOLDERS.—The Greenfield Tap & Die Corporation, Greenfield, Mass., has recently issued an illustrated booklet describing its Acorn dies and die holders. The Acorn die is adjusted radially by means of an internal cone adjusting cap which fits over the ends of the die lands. This makes possible accuracy of adjustment without interfering with the lead. The die is easily sharpened by grinding, and when once set up may be removed and replaced or reground without disturbing the position of the holder in the machine. The catalogue contains illustrations showing clearly the construction of the Acorn die, the releasing die holder and adapter for applying the Acorn die to machines or holders already in operation. The holders are hollow and there is no limit to the length of thread which they will cut. The booklet contains the usual catalogue information as to prices and specifications.

RAILWAYMEN IN THE BRITISH ARMY.—At the end of April, 1917, 4,359 employees of the London, Brighton & South Coast had gone on active service. Members of the company's pension fund who had gone numbered 2,028, and the company was paying their contributions during their absence.

Railway Construction

DANVILLE, KANKAKEE & CRESCENT TRACTION.—This company will soon begin the construction of a line from Danville, Ill., through Potomac, Ellis, Rankin, Cissna Park, Crescent City, Le Rable and Woodworth to Kankakee, a total distance of 81 miles. Right of way has been obtained on approximately 40 per cent of the proposed route, and surveys made on about half. There is no heavy grading, and only two curves in the entire mileage. A contract for the work has been let to the C. E. Coon Construction Company, Cleveland, Ohio. The road will operate passenger and freight service. E. E. Myer, Crescent City, Ill., is president, and W. K. Woodruff, Kankakee, is chief engineer.

DULUTH, MISSABE & NORTHERN.—This company has completed plans for the double-tracking of its line between Virginia, Minn., and Wolf, a distance of approximately 10 miles. In connection with this project the road will also build additional yard tracks. The total cost of improvements will be about \$150,000.

FREEPORT SULPHUR COMPANY.—This company is contemplating building a line from Freeport, Tex., to Rosenberg, by way of Brozoria and Columbia. The line will be approximately 60 miles long. It is as yet only partly located. W. A. Randle, Freeport, Tex., is chief engineer.

GRAND TRUNK.—Plans for two new stations have been completed by this company. Work is to be started at once on a modern station building at St. Catharines, Ont., and work has already been started on a new station at Berlin, N. H. The latter is to be a brick building with a granite base and tiled roof.

GREAT NORTHERN.—This company contemplates the construction of a bridge 1,600 ft. long over the Musselshell river at Weede, Mont., but does not expect to carry out the work in the immediate future.

GULF, COLORADO & SANTA FE.—This company will erect a freight house and office building at Temple, Tex. The building will be 32 ft. wide and 266 ft. long, with concrete foundations, brick walls and tile roof. The office portion will be two stories high, and the freight house one story high. Bids will be opened in about 30 or 45 days, and construction is expected to start within two months. The estimated cost is \$40,000.

KLAMATH FALLS MUNICIPAL RAILWAY.—This company, which will be the first unit of the Oregon, California & Eastern, is building a line from Klamath Falls, Ore., to Dairy, a distance of 20 miles. A contract has been let to the Robert E. Strahorn Construction Company, Spokane, Wash. The work involves about 250,000 cu. yd. of grading, of which approximately 75,000 cu. yd. is rock. The maximum gradient is 1.25 deg., and the maximum curvature 6 deg. R. E. Strahorn, Spokane, is president, and N. H. Bogue, Klamath Falls, is chief engineer.

MINERAL BELT.—This company is now building about five miles of new line between Sulphur Mine, Va., which is on the Chesapeake & Ohio and Valzinco Mine. The work includes one steel and concrete bridge of 390 ft. and about 100 ft. trestle approach on each side. G. P. Clay, Richmond, Va., is the contractor, and it is expected that the work will be finished before September this year. Berkely Williams, president, Richmond, Va.; Paul S. Morton is resident engineer.

MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE.—A contract has been awarded by this company to the Withee Construction Company for the building of a depot at Stevens Point, Wis. The building will be two stories high, of brick and reinforced concrete construction.

MISSOURI PACIFIC.—To provide for the traffic of the cantonment which is being established by the War Department at Fort Logan, H. Roots, near Little Rock, Ark., this company is building a spur 4.1 miles long, together with three sidings each 2,000 ft. long. There will also be a shelter, and the improvements altogether will cost \$100,000. Also the government is building,

within the camp grounds, about five miles of track. The Missouri Pacific is also laying additional side tracks at Jefferson Barracks, at a cost of about \$9,000.

MOLTZ LUMBER COMPANY'S ROAD.—Work is now under way building a line from Lake Toxaway, N. C., west to Sapphire, and track laying will be started about August 1. The work on three miles will be difficult, and on seven miles involves the handling of about 59,000 cu. yd. The maximum grade will be 4.5 per cent, and there will be one 36-deg. curve. The line is being built to carry lumber and forest products, and the work is being carried out with company's forces. Jerome Moltz, president, Asheville, N. C.; Robert S. Brown, engineer.

NORTHERN PACIFIC.—This company will construct a steel and concrete bridge over the Shields river near Livingston, Mont., to replace the old wooden bridge recently destroyed. The new structure will cost approximately \$200,000.

OSAGE COUNTY & SANTA FE.—This company has awarded a contract to Maney Brothers & Co., Oklahoma City, Okla., for grading, bridge work, track laying and surfacing, fencing and buildings, required for the construction of the line from Bowen to Fairfax.

PENNSYLVANIA-DETROIT.—A contract has been awarded by this company to the W. S. Newkall Company, Detroit, Mich., for 325,000 cu. yd. of grading, and 6,750 yd. of concrete masonry, for a classification yard at Detroit.

PENNSYLVANIA LINES WEST.—This company has awarded a contract to the Alliance Construction Company, Indianapolis, Ind., for the construction of an engine house and annex at Indianapolis. The annex will be 60 ft. wide by 150 ft. long and one-story high; the engine house 110 ft. long, and will have 10 stalls. Both buildings will be of brick construction with reinforced concrete foundations.

PHILADELPHIA & READING.—This company has let contracts for the grading and masonry in connection with the construction of third and fourth tracks between Belle Mead, N. J., and Manville, to Richards & Gaston, Inc., New York. Contracts for bridge superstructures have been let to the Phoenix Bridge Company for bridges east of Belle Mead, N. J.; west of Hamilton and east of Weston, and to the American Bridge Company for a bridge west of Weston. A contract has also been let for grading north and south of Saucon creek, South Bethlehem, Pa., to C. P. Bower, Philadelphia, Pa.

A contract has been given by the Philadelphia & Reading to Seeds & Derham, Germantown, Philadelphia, Pa., for building the new Columbia bridge over the Schuylkill river at Belmont, Philadelphia, on the main line. This will be a four-track concrete arch bridge, with eight arches of about 103 ft. span each.

ST. PAUL UNION DEPOT COMPANY.—A contract has been awarded by this company to Morris, Sheppard & Dougherty, St. Paul, Minn., and the George J. Grant Construction Company, acting as one corporation, for the construction of the new St. Paul passenger terminal. The contract covers the construction of the headhouse, the grading for the elevation of passenger tracks, the building of retaining walls, the relocating of tracks, etc. The estimated cost of the project is \$4,500,000, and the work is being done on a cost plus percentage contract. Work has already been started, and it is expected that the headhouse will be finished by the latter part of December, 1918.

WABASH.—This company, the city of Moberly, Mo., and the Missouri, Kansas & Texas, are contemplating the construction of a viaduct over Rollins street, Moberly. The negotiations for the building of the viaduct have extended over a period of several years, and just recently the Missouri Public Service Commission has taken up the matter. Although it is expected that a decision will soon be reached, nothing definite has yet been determined.

YOUNGSTOWN & NILES.—This company has awarded a contract to the Republic Railway & Light Company, engineering department, for the construction of a road between Youngstown, Ohio, and Niles, a distance of seven and one-half miles. The line will be built on private right of way, and will traverse the new town of McDonald, which is being built by the Carnegie Steel Company.

Railway Financial News

BUFFALO, ROCHESTER & PITTSBURGH.—Five per cent equipment trust certificates to the amount of \$1,600,000 have been issued and will shortly be offered to the public by the bankers who have bought them: Tilney, Ladd & Co., of New York; Graham, Parsons & Co., Philadelphia; Colgate, Parker & Co., Philadelphia.

MARSHALL & EAST TEXAS.—This road is to be sold by order of the United States District Court on September 4. The upset price is \$675,000. The sale will be held in Marshall, where the general offices are located. This railroad runs from Winnsboro, Tex., southeast to Elysian Fields, a distance of 92 miles. It is controlled by a syndicate of St. Louis men, headed by A. T. Perkins, of that city. It is expected that it will be bought in, and that, after a reorganization, steps will be taken to extend the line into Louisiana.

PITTSBURGH, SHAWMUT & NORTHERN.—Receiver F. S. Smith has applied to the New York State Public Service Commission, Second district, for approval of receivers' certificates to the amount of \$1,700,000, needed to pay off receivers' certificates about to mature.

SAVANNAH & ATLANTA.—William Morris Imbrie & Co. have announced that the Georgia Railroad Commission has approved the proposed issue of \$2,500,000 6 per cent convertible first and consolidated mortgage bonds of the Savannah & Atlanta Railway, dated July 16, 1917, and due May 1, 1935. The bonds are part of an authorized issue of \$5,000,000. The bonds have been underwritten by a syndicate of New York bankers, and they will shortly be offered to the public.

AUSTRALIAN RAILWAY EMPLOYEES.—The average number of employees in the service of the Government Railways of Western Australia during the year 1916 was 7,703, as against 7,918 for the year 1915. Salaries and wages amounted to £1,247,491 (\$6,062,806), a decrease of £29,969 (\$185,650) compared with the previous year. During the year an increasing number of the staff volunteered for service with the Australian Expeditionary Forces, the total from the railway service being 1,499 up to the date of the latest report. The roll of honor shows that 51 have been killed in action or died of wounds.

RAILWAY DEVELOPMENT IN SPAIN.—Spain commenced to build railroads in 1840, and at the beginning of 1916 there were 8,700 miles of track. Up to 1915 the state had contributed \$139,000,000 for railway construction. The street railways of Spain have about 600 miles of track, of which 460 miles utilize electric power, 95 miles steam power, and the remainder horses and mules. In 1916, 85.62 miles of track were built, a small increase in proportion to the rapid growth of Spain's industrial and commercial activity. The new lines are from Irun to Elizando, 31.07 miles; from Haro to Ezcarey, 19.88 miles; from Trozas de Orusco to Mondejar, 19.26 miles; a section of the road from Malaga to San Fernando, 8.70 miles; from Sarria to Vallvidrera, 3.11 miles; and a few other short additions.

RAILWAY DEVELOPMENTS IN THE RUSSIAN CAUCASUS.—The British consul at Batum reports that railway construction proceeded apace in the Caucasus in 1916. The Tabriz-Julfa Railway, with its branch from Sofian to Sherefkhani on Lake Urumiah, was completed and opened to traffic about the middle of the year. The Shahtakhti-Maku-Bayazet, or Alashkert Railway was also working as far as Bayazet before the close of the year. This line is now being extended southward in the direction of Lake Van. The Batum-Trebizond Railway was begun about August, 1916, and by the end of the year work on several sections of the railroad was reported to be advancing favorably. The Baku-Julfa, or Araxes Valley Railway progressed fairly rapidly, and much work in connection with earthworks and bridging was completed. Progress was also made during the year with the work on the Novo-Senaki-Sukhum section of the Black Sea Coast Railway, which is to join the Tuapse-Armavir line at Tuapse.

Railway Officers

Executive, Financial, Legal and Accounting

S. G. Lutz, general traffic manager of the Chicago & Alton, has been appointed vice-president in charge of traffic, with headquarters at Chicago, and his former position has been abolished. Effective July 17.

Howard Elliott, formerly president of the New York, New Haven & Hartford, has been elected chairman of the executive committee of the Northern Pacific, with headquarters at New York. Mr. Elliott has been a member of this committee since July 1, as noted in the *Railway Age Gazette* of July 6, page 43. He retains his connection with the New Haven road as chairman of a committee in charge of intercorporate affairs of the New Haven. He also continues as a member of the Railroads' War Board, Washington, D. C.

John Mitchell Johnson, recently elected vice-president of the Missouri Pacific at Chicago, with such duties as may be assigned to him by the president, was born at Cincinnati, Ohio,



J. M. Johnson

on May 13, 1845, and entered railway service as a station agent on the Indianapolis, Cincinnati & Lafayette, at Indianapolis, Ind., on January 1, 1871. On November 1, 1872, he was appointed general freight and passenger agent of the Cincinnati & Martinsville, which was later taken over by the Indianapolis, Cincinnati & Lafayette, and in 1875 became traveling auditor of the latter road. Later he was successively in charge of local freight traffic and assistant general freight agent at Lafayette, Ind. On January 1, 1883, he became associated with

the Cincinnati, Indianapolis, St. Louis & Chicago, being placed in charge of freight traffic originating at Chicago and the Northwest. On February 20, 1884, he became assistant general freight agent of the Chicago, Rock Island & Pacific, and served consecutively until April 1, 1903, as general freight agent, freight traffic manager and third vice-president. From April 1, 1903, to November 1, 1907, he was assistant to the vice-president of the Gould Lines at Chicago. On the latter date he was elected vice-president, in charge of traffic, of the Missouri Pacific and the St. Louis, Iron Mountain & Southern, and later his jurisdiction was extended over the Denver & Rio Grande and the Western Pacific, with the title of vice-president in charge of traffic. His service with the Western Pacific were terminated on March 5, 1915, when that company passed into the hands of the receiver, and with the Denver & Rio Grande in November of the same year. On August 19, 1915, he was appointed chief traffic officer of the Missouri Pacific, and upon the reorganization of that road on June 1, 1917, was appointed director of traffic. On June 11, 1917, at his request, he was relieved of the duties and responsibilities of the traffic department, and was elected vice-president, as already noted.

Operating

J. B. Gorton has been appointed car accountant on the Denver & Rio Grande, with headquarters at Denver, Colo., succeeding E. M. Horton, retired on a pension.

A. W. Woodruff, assistant superintendent of the Union Pacific, with headquarters at Ogden, Utah, has been appointed superintendent of the Wyoming division, with headquarters at Cheyenne, Wyo.; H. L. Bell, superintendent of the Wyoming

division, has been transferred to the western division, with headquarters at Green River. Under a recent arrangement the two divisions between Ogden and Omaha, Neb., have been divided into three; G. E. Stevens, assistant trainmaster at Ogden, has been transferred to Evanston, Wyo.

L. B. Wickersham has been appointed general superintendent of the electric lines of the Norfolk Southern, with office at Norfolk, Va., vice L. D. Mathes, resigned on account of ill health.

C. E. Brooks, assistant superintendent on the Oregon Short Lines at Nampa, Idaho, has been appointed superintendent of the newly created Montana division, comprising that part of the Oregon Short Line from Pocatello to Silver Bow and branches, with headquarters at Pocatello.

W. Van Valkenburgh, general baggage and mail agent of the Long Island Railroad at Long Island City, N. Y., has been appointed camp general agent of the American Railway Association and of the Long Island Railroad, with headquarters at Camp Long Island, Yaphank, N. Y.

F. N. McPhee has been appointed trainmaster of the San Joaquin division of the Southern Pacific, with headquarters at Bakersfield, Cal., succeeding J. C. Muir; J. E. Enger has been appointed trainmaster of the Portland division, with headquarters at Roseburg, Ore., succeeding F. Hanssen, resigned.

M. W. Sullivan, trainmaster of the Delaware & Hudson at Oneonta, N. Y., has been appointed superintendent of the Champlain division, with office at Plattsburg, N. Y., in charge of the territory from the North Yard limit board at Whitehall, N. Y., to and including Rouses Point; also the Baldwin, Ticonderoga, Ausable, Mooers and Chateaugay branches.

W. C. Ennis, trainmaster on the Chicago, Milwaukee & St. Paul at Spokane, Wash., has been appointed assistant superintendent of the Rocky Mountain division, with headquarters at Three Forks, Mont.; T. J. Hamilton, district master mechanic at Tacoma, has been appointed assistant superintendent of the Missoula division, with headquarters at Avery, Idaho; F. C. Dow, assistant trainmaster at Mobridge, S. D., has been appointed trainmaster at Tacoma; A. E. Campbell, trainmaster at Malden, Wash., has been transferred to the Idaho division; J. P. Phelan, trainmaster at Missoula, Mont., has been transferred to Malden, Wash.

Traffic

J. Brinker has been appointed express and mail traffic manager of the Atchison, Topeka & Santa Fe, with headquarters at Chicago.

Harold K. Faye, assistant in the office of the vice-president in charge of traffic, of the Chicago, Burlington & Quincy at Chicago, has been appointed traffic manager of the Western Pacific, with headquarters at San Francisco, Cal., succeeding J. T. Hendricks, resigned to enter private business.

Engineering and Rolling Stock

F. P. McDonald has been appointed master mechanic of the Stockton division of the Southern Pacific at Stockton, Cal., succeeding A. D. Williams, promoted.

G. E. Cessford, district master mechanic on the Chicago, Milwaukee & St. Paul, at Deer Lodge, Mont., has been transferred to Tacoma, Wash., succeeding T. J. Hamilton, promoted.

Samuel R. Parslow, who has been engaged in mechanical valuation work for the Great Northern for the past two years, has been appointed shop superintendent at Great Falls, Mont.

O. H. Mann has been appointed engineer maintenance of way of the Northern division of the Chicago Great Western, with headquarters at St. Paul, Minn., succeeding W. J. Calvin, resigned.

George C. Christy, general foreman at the McComb (Miss.) shops of the Illinois Central, has been appointed master mechanic, with headquarters at Vicksburg, Miss., succeeding C. Linstrom, deceased.

H. L. Needham, general foreman of the locomotive department of the Illinois Central at Twenty-seventh street, Chicago, has been appointed master mechanic of the Springfield division, with headquarters at Clinton, Ill., succeeding William O'Brien,

assigned to other duties. J. Ormsby has been appointed general foreman in the locomotive department at Twenty-seventh street, Chicago, effective July 16.

F. B. Tapley, who has been appointed assistant engineer of maintenance, all lines, of the Canadian Government Railways, with office at Moncton, N. B., as has already been announced in these columns, began railway work in 1903 with the Canadian Pacific as rodman, and later served consecutively as transitman, resident engineer and assistant engineer with the engineer of maintenance of way, and in the general manager's office at Montreal, Que. In July, 1916, he resigned from the Canadian Pacific to become assistant engineer in the office of the chief engineer of the Canadian Government Railways at Moncton, N. B., which position he held until his appointment as assistant engineer of maintenance, all lines. This position was recently created in connection with a re-organization of the engineering department.

F. G. Grimshaw, whose appointment as superintendent of motive power of the New Jersey division of the Pennsylvania Railroad, with headquarters at New York, has already been announced in these columns, was born on November 26, 1878, at Paterson, N. J., and was educated at Cornell University. After serving for one year in the Cooke Locomotive Works, he entered the service of the Pennsylvania Railroad in 1902 as special apprentice in the Altoona machine shops. From 1905 to August, 1906, he served successively as yard clerk and assistant yardmaster on the Pittsburgh division, and then was appointed assistant master mechanic of the Monongahela division. In June, 1907, he was appointed master mechanic on the West Jersey & Seashore, serving in that capacity until September, 1912, when he was appointed assistant engineer of motive power on the Western Pennsylvania division of the Pennsylvania Railroad at Pittsburgh, Pa. In November, 1914, he was transferred to Philadelphia as assistant engineer of electric equipment, and now becomes superintendent of motive power of the New Jersey division of the same road, as above noted.



F. G. Grimshaw

Railway Officers in Military Service

W. M. Vandersluis, signal engineer of the Illinois Central at Chicago, has been commissioned captain in the Engineer Officers' Reserve Corps, but has not yet been assigned to duty.

H. T. Douglas, Jr., chief engineer of the Chicago & Alton at Chicago, has been commissioned major in the Engineer Officers' Reserve Corps; R. A. Cook, valuation engineer, and J. W. Reid, bridge engineer, have been commissioned captains in the Engineer Officers' Reserve Corps; P. J. Watson, Jr., assistant engineer at Bloomington, Ill., who was granted a leave of absence to enter the officers' reserve training camp at Ft. Sheridan, has been commissioned captain and assigned to Ft. Leavenworth, Kan.

OBITUARY

William R. Morrison, vice-president of the Gallatin Valley and for many years head of the insurance department and the railway mail service of the Chicago, Milwaukee & St. Paul, at Chicago, died at his home in that city on July 20.

Charles E. Kingston, formerly from May, 1912, to December, 1916, assistant general freight agent of the Philadelphia, Baltimore & Washington, at Philadelphia, Pa., and later special agent of the same road, died on July 21 at his home in Ridley Park, Pa., at the age of 59.